THE CONTRIBUTIONS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) TO QUALITY EDUCATION: AN ACTION RESEARCH PROJECT ON THE IMPLEMENTATION OF FIELDWORK IN THE SCHOOL GEOGRAPHY CURRICULUM

BY

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DECLARATION

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ABSTRACT

Goal 4 of the United Nations Sustainable Development Goals (UNSDGs) emphasises the integration and implementation of education for sustainable development (ESD) in formal school contexts, including the provision of professional development for teachers with a view to enhancing the delivery of quality education for all school learners by 2030. Integrating ESD into formal education institutions through an action research approach is regarded as an effective avenue through which teachers' capacity can be enhanced to implement ESD effectively in their teaching practice.

This dissertation reports on an action research project undertaken at a secondary school in Windhoek in the Khomas region of Namibia. The purpose of the research study was to explore and illuminate how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributes to the delivery of quality education within the Namibian senior secondary school Geography curriculum.

The research was designed as a collaborative action research study, framed within an interpretive paradigm. The investigation process was conducted in two phases: Phase one was a small-scale qualitative survey involving semi-structured interviews carried out on a purposive sample of six practising Geography teachers. The purpose of the survey was twofold: firstly, to explore how Geography teachers conceptualised ESD as well as to explore how they integrated and implemented ESD in their classroom practice; secondly, to explore Geography teachers' understanding and application of geographical fieldwork as a teaching method. Survey data pertaining to teachers' classroom practices formed the basis for designing a classroom pedagogical intervention as an approach for integrating ESD into the Geography school curriculum and in teachers' classroom practices. The design of the classroom pedagogical intervention was responsive to the Geography teachers' challenges in effectively integrating and implementing ESD through the application of a learner-centred fieldwork teaching method. A synthesis of the social constructivist theory of learning and a 'strengths' model to ESD provided a theoretical and practical framework for designing and implementing a classroom pedagogical intervention.

Phase two of the study involved the implementation of the classroom pedagogical intervention by two teachers in their respective Geography lessons. The researcher observed the lessons in order to collect data on the teaching and learning activities. The implementation of the classroom pedagogical intervention provided opportunities for classroom teachers to reorient their teaching practice by adopting a learner-centred fieldwork teaching method compatible with the principles of ESD and ESD pedagogy. Observations, focus group discussions, audio transcripts of classroom activities, analysis of lesson-planning records were all employed to gather in-depth qualitative data from teachers and their learners in order to interrogate the impact of the pedagogical intervention. Thereafter, triangulated data were deductively analysed and interpreted using a multidimensional framework of quality in education as a data analysis tool.

This study found that, the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributed to all seven dimensions of quality education. Thus, it contributed towards the delivery of quality education within the Namibian senior secondary school geography curriculum. The study provides key recommendations in an attempt to contribute towards the effective integration and implementation of ESD in the Namibian senior secondary school Geography curriculum. The study further contributes to the understanding of how the implementation of ESD in school contexts can be evaluated within the context of Goal 4 of the UNSDGs.

OPSOMMING

Doelwit 4 van die Verenigde Nasies se Doelwitte vir Volhoubare Ontwikkeling (UNSDG's) beklemtoon die integrasie en implementering van onderwys vir volhoubare ontwikkeling (ESD) in formele skoolkontekste, onder meer deur die voorsiening van professionele onderwysersontwikkeling, ten einde die gehalte van onderwys aan alle skoolleerders te verbeter teen 2030. Die integrasie van ESD in formele onderwysinstellings deur middel van 'n aksienavorsingsbenadering word beskou as 'n effektiewe manier waardeur onderwysers se vermoë verbeter kan word om ESD effektief in hul onderrigpraktyk te implementeer.

Hierdie proefskrif lewer verslag oor 'n aksienavorsingsprojek wat by 'n senior sekondêre skool in Windhoek, in die Khomas-streek van Namibië, onderneem is. Die doel van die navorsing was om ondersoek in te stel na en lig te werp op hoe die integrasie en implementering van ESD deur die toepassing van geografiese veldwerk as 'n onderrigmetode tot die lewering van gehalte-onderwys binne die Namibiese geografiekurrikulum vir senior sekondêre skole bydra.

Die navorsing is ontwerp as 'n samewerkende aksienavorsingstudie, wat binne 'n interpretatiewe paradigma geplaas word. Die ondersoekproses is in twee fases uitgevoer: Fase een was 'n kwalitatiewe opname op klein skaal, met inbegrip van semi-gestruktureerde onderhoude, wat via doelgerigte steekproefneming onder ses praktiserende Geografie-onderwysers uitgevoer is. Die doel van die opname was tweeledig: eerstens, 'n ondersoek na hoe Geografie-onderwysers ESD konseptualiseer, asook hoe hulle ESD in hul klaskamerpraktyk integreer en implementeer; en tweedens, 'n ondersoek na Geografie-onderwysers se begrip en toepassing van geografiese veldwerk as 'n onderrigmetode. Data uit opnames oor onderwysers se klaskamerpraktyke vorm die grondslag vir die ontwerp van 'n pedagogiese intervensie vir die klaskamer as 'n benadering tot die integrasie van ESD in die Geografie-skoolkurrikulum en in onderwysers se klaskamerpraktyke. Die ontwerp van die pedagogiese intervensie vir die klaskamer is in reaksie op die uitdagings aan Geografie-onderwysers wat betref die effektiewe integrasie en implementering van ESD deur die toepassing van 'n leerdergesentreerde veldwerkonderrigmetode. 'n Sintese van die sosiaal-konstruktivistiese leerteorie en 'n

“sterk punte”-model om ESD bied ’n teoretiese en praktiese raamwerk vir die ontwerp en implementering van ’n pedagogiese intervensie vir die klaskamer.

Fase 2 van die studie behels die implementering van die pedagogiese intervensie vir die klaskamer deur twee onderwysers in hul onderskeie Geografie-lesse. Die navorser het die lesse waargeneem ten einde data oor die onderrig- en leeraktiwiteite te versamel. Die implementering van die pedagogiese intervensie vir die klaskamer bied geleenthede vir klaskameronderwysers om hul onderrigpraktyk te heroriënteer deur ’n leerdergesentreerde veldwerkonderrigmetode te gebruik wat versoenbaar is met die beginsels van ESD en ESD-pedagogiek. Waarnemings, fokusgroepbesprekings, oudiotranskripsies van klaskameraktiwiteite, en ontledings van lesbeplanningsrekords is gebruik om omvangryke kwalitatiewe data van onderwysers en hul leerders te versamel en die uitwerking van die pedagogiese intervensie te ondersoek. Daarna is driehoekige data deduktief ontleed en geïnterpreteer aan die hand van ’n multidimensionele raamwerk van onderriggehalte as ’n dataontledingsinstrument.

Hierdie studie het bevind dat die integrasie en implementering van ESD deur die toepassing van geografiese veldwerk as 'n onderrigmetode bygedra het tot al sewe dimensies van gehalte-onderwys. Dus, het dit bygedra tot die lewering van gehalte-onderwys in die Namibiese senior sekondêre skool geografie kurrikulum. Die studie bied belangrike aanbevelings in ’n poging om by te dra tot die effektiewe integrasie en implementering van ESD in die Namibiese geografiekurrikulum vir senior sekondêre skole. Verder dra die studie by tot insig oor hoe die implementering van ESD in skoolkontekste, binne die konteks van Doelwit 4 van die UNSDG’s, geëvalueer kan word.

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DEDICATION

This dissertation is dedicated to my late parents: Bo Frederick Moowa Simasiku and Bo Alphonsina Mulemwa Zambwe. They laid the firm foundation upon which the accomplishment of this dissertation was based. Although they are no longer physically present in our midst, their spirits remain a trustworthy source of moral guidance to me. I especially pay the highest tribute to them for instilling the virtues of hard work, perseverance and self-reliance in us their children, as embodied and exemplified by the completion of this dissertation. I will continue to draw inspiration from their memories. May their souls rest in eternal peace.

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ACRONYMS

CAR	Collaborative Action Research
EE	Environmental Education
ESD	Education for Sustainable Development
ESD LPF	Education for Sustainable Development Learning Performance Framework
GAP	Global Action Programme
GDP	Gross Domestic Product
ICES	International Conference on Environment and Society
LPF	Learning Performance Framework
LR	Cooperative Learning Relationships
MOE	Ministry of Education
NGO	Non-Governmental Organisation
NIED	National Institute for Educational Development
NSSC	Namibia Senior Secondary Certificate
PBE	Place-Based Education
PP	Productive Pedagogies
QE	Quality Education
QESD	Quality Education for Sustainable Development
SC	Sustainability Competencies
SD	Sustainable Development
SDG	Sustainable Development Goals
UN	United Nations
UNCED	United Nations Conference on Environment and Development

UNDESD	United Nations Decade of Education for Sustainable Development (2005-2014)
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNGA	United Nations General Assembly
UNSDGs	United Nations Sustainable Development Goals
USA	United States of America
WCED	World Commission on Environment and Development
WSSD	World Summit on Sustainable Development
ZPD	Zone of Proximal Development

1 ORIENTATION TO THE STUDY

1.1 INTRODUCTION TO THE STUDY

This chapter presents an orientation to the study, which explored how education for sustainable development (ESD), undertaken through geographical fieldwork as a teaching method, contributes to quality education within the formal school context in Namibia. Specifically, the study explored how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education within the Namibian senior secondary school Geography curriculum. This chapter commences by providing the researcher's personal circumstances that inspired and motivated the research study. Following that, the chapter presents discussions in the following order: orientation to the research problem; research context; the rationale for the study; research context; the description of the research problem; research question; the research aim and objectives; clarification of some key concepts; potential value of the study and finally, the structure of the dissertation.

1.2 PERSONAL MOTIVATION

This study was motivated by the researcher's passion to contribute towards the delivery of quality formal education within the Namibian formal education system. The study is inspired by his academic and professional background in the field of education. His professional background experience includes engagement in international education programmes on the development, implementation and evaluation of an experiential learning programme for international students at the Centre for Global Education and Experience at Augsburg University, an international higher education institution in the United States of America (USA). He also lectured and tutored undergraduate and postgraduate students in the field of environmental education and sustainability, both at Rhodes University and at the Namibian University of Science and Technology respectively. The researcher's other work experience includes educating Namibian youth and educator groups about environmental sustainability at the Namib Desert Environmental Education Trust (NaDEET).

NaDEET is a non-governmental organisation (NGO) providing learner-centred education programmes to schools by addressing relevant environmental and sustainability issues in Namibia. He worked as Centre Manager: Environmental Educator at NaDEET and his duties and responsibilities included developing, implementing and evaluating environmental education and sustainability programmes for both teachers and learners. The work duties as an environmental educator required him to train teachers on how to integrate and implement environmental education and sustainability education into their teaching practice through learner-centred teaching methodologies. Additionally, he began his professional career as a senior secondary school Geography teacher in Namibia.

The researcher's work duties while at the Centre for Global Education and Experience required him to lecture an environmental sustainability course to international undergraduate students using experiential learning pedagogies. In performing this work, he was astonished by the passion students demonstrated for experiential learning activities; this stimulated his interest in exploring the impact of such learning methods and activities on the quality of education. This ambition provided the impetus for this study, namely, to investigate how integrating and implementing ESD through the application of geographical fieldwork as a teaching method in the formal school curriculum could contribute towards the provision of quality education in schools.

Working at the Centre for Global Education and Experience kept the researcher abreast of how the United Nations Sustainable Development Goals (UNSDGs) could be translated into education projects and programmes at the local level. From this experience the researcher was inclined to explore how the integration and implementation of ESD at the local level could be evaluated in classroom contexts. In view of the above and in the context of this study, the researcher was interested in establishing how ESD teaching and learning processes in secondary school classroom contexts could be designed and implemented by classroom teachers and how they could be evaluated in relation to contributing towards providing quality education in secondary school classrooms.

1.3 ORIENTATION TO THE RESEARCH PROBLEM

This research study was contextualised with reference to Goal 4 of the United Nations Sustainable Development Goals (UNSDGs) (cf. 2.4) and focused on the discourses of ESD and quality education. As indicated earlier, the study was mainly centred on the Namibian senior secondary school Geography curriculum. The study is needed as a result of questions that are being asked by education stakeholders about the capacity of the Namibian education system to deliver quality and relevant learning outcomes amongst school learners, particularly school leavers.

An increase in the provision of access to free basic education in many southern African countries and other sub-Saharan African countries has had an impact on the quality of education in schools. Ofei-manu and Didham (2014:3) state that "the focus on access and attainment has overshadowed important aspects like the contents of education, application of learning pedagogies, and adequate teacher training". Educational quality issues are a priority on the national agendas of governments in southern Africa, because it is now evident that simply providing access to schooling is not a condition for achieving educational quality (Lotz-Sisitka, 2013). But rather, educational quality issues are closely linked to the processes of teaching and learning (ibid.). Moreover, pedagogy is a key feature when analysing the success or failure of ESD and quality education implementation processes in education institutions. Both ESD and quality education emphasise the significant role of a learner-centred approach to pedagogy in their actualisation (Schweisfurth, 2015; Rieckmann, 2017).

However, translating the policy of learner-centred education into classroom practice continues to present challenges for teachers in Namibian schools. For example, the National Institute for Educational Development (NIED, 2003:1) acknowledged that:

> Since learner-centred education was introduced in 1991 as a foundation policy for the new educational system of Namibia, there have been different understandings of what is meant by learner-centred education and how to put it into practice. A growing body of research in Namibia has shown that the curricula and syllabuses, textbooks and materials, assessment and examinations developed during the 1990's are not consistently based on learner-centred principles.

Consequently, it is not surprising that teaching in classrooms, as well as in teacher education colleges, universities including in-service training programmes and

professional development are not consistent (NIED, 2003:2). Part of the problem has been identified as a lack of clarity about what the underlying principles and theory of learner-centred education are (ibid.). A number of studies have confirmed the challenges of applying learner-centred pedagogies in Namibian school classrooms as well as in teacher training institutions (cf. Chaka, 1997; Sibuku, 1997; Van Graan, 1998, 1999; Shinyemba, 1999; Mutwa, 2002; Kapenda, 2008; Nyambe & Wilmot, 2012, 2014; Awases, 2015; Tshiningayamwe, 2017; Ockhuizen, 2018). There had been calls in Namibia to develop educators' capacities to apply learner-centred teaching pedagogies such as fieldwork in school classrooms (NIED, 2003). This study was an attempt to contribute to the above calls by investigating how the integration and implementation of ESD in the Geography school curriculum could offer opportunities for teachers to apply geographical fieldwork as a teaching method underpinned by a learner-centred approach to teaching and learning in a classroom setting, as well as to probe how such an approach to teaching and learning could contribute to the delivery of quality education in schools.

The researcher drew on learner-centred literature in relation to quality education from a sub-Saharan African context because it provided a pragmatic solution owing to a scarcity of literature on the subject in Namibia. It is anticipated that this study would contribute towards filling this gap in the literature on the impact of learner-centred teaching pedagogies (such as fieldwork) on the delivery of quality education in secondary school contexts. Moreover, there is further justification for the study in that:

> The pedagogical paradigm shift from more teacher-centred to more learner-centred approaches is evident across sub-Saharan Africa. Although each nation has a unique educational system and its own cultural, economic, and political contexts affecting LCP [learner-centred pedagogy], similarities in policy formation and implementation definitely exist. It would be unfortunate, therefore, to not benefit from the experience of one nation's attempt to institute LCP in its primary and secondary schools as well as in teacher education (Vavrus, Thomas & Bartlett, 2011:61).

1.4 RESEARCH CONTEXT

This study was undertaken in Windhoek, the capital city of Namibia, with an estimated total population of 2.4 million people (Namibia Statistics Agency [NSA], 2019).

Namibia is one of the 193 United Nations (UN) member states that embraced the 2030 Agenda for Sustainable Development in 2015 (ibid.) (cf. 2.2). In embracing the Sustainable Development Goals (SDGs), Namibia committed itself "to ensure full integration of the SDGs into the developmental documents" (NSA, 2019:5). Namibia is faced with numerous Sustainable Development (SD) challenges due to its development context that is characterised by enormous social and economic inequalities (Namibia. Voluntary National Review [VNR], 2018). The SD challenges in Namibia can be categorised as follows:

> ***Social issues*** – Human health and welfare including HIV and AIDS, TB and malaria, corruption, cultural diversity, human rights abuses, all forms of violence, drug and alcohol abuse, erosion of cultural values and morals, gender inequality, poverty and inequality, concerns for poor governance. ***Economic challenges*** – unemployment, rural/urban migration, corruption, need for stable macro-economic environment, limited human resources and capacity, increasing competition for shared resources, population growth and settlement patterns, land issues including equitable access and sustained productivity. ***Environmental issues*** – limited water resources, unsustainable natural resource management, loss of wildlife and biodiversity, drought, climate and global atmospheric change (Republic of Namibia, 2009:11).

In view of the above SD challenges, Namibia is also experiencing an accelerated shift from a rural-based society to that of an urban-based society (Weber and Mendelsohn, 2017). The high rate of urbanisation has created a high demand for urban housing that has led to the mushrooming of informal settlements in the country's urban centres (ibid.). It is projected that Namibia's current 140, 000 informal houses in the urban areas is likely to increase two-fold in 7 to 8 years' time if the rural to urban population transition is not addressed directly (ibid.:11). This unplanned and unsustainable growth of informal settlements is regarded as one of Namibia's biggest SD challenges due to the economic, social and environmental implications associated with such rapid expansion (Weber and Mendelsohn, 2017).

The Namibian government views education as an integral component in addressing the challenges associated with the sustainable development challenges. It is against this background that, the Namibian government committed itself to international agreements that "promote sustainable development through different modes of education" (Republic of Namibia, 2009:11). In 2009, the Namibian government drafted the *Education for Sustainable Development (ESD) Implementation Strategy Document* in an attempt to address the following *interrelated goals:*

Goal 1: *Strengthening and re-orientation of education and training, planning and development policies and programmes towards sustainable development;*

Goal 2: *To promote research in order to strengthen education for and sustainable development;*

Goal 3: *To promote the widespread use of information technology in the pursuit of ESD implementation processes;*

Goal 4: *To include sustainability issues and sustainable development principles in education and training programmes to enhance quality, focus and relevance in life-long learning;*

Goal 5: *Strengthening public awareness and community-based education and training initiatives to broaden public understanding of sustainable development in community activities and encourage behavioural change;*

Goal 6: *To strengthen political will and government support for ESD implementation through partnerships, networking and exchange (Republic of Namibia, 2009:24-26).*

In the formal school curriculum, Education for Sustainable Development (ESD) is being integrated as a cross-curricular theme in all school subjects (cf. 2.6.2). Geography as a school subject is regarded as an important subject for integrating and implementing ESD in the Namibian school curriculum. The Namibian formal school curriculum acknowledged that, Geography as a school subject in the Namibian context is:

> a study of the earth and the interaction between humans and nature; it examines humans in their interdependent relationship with the earth. Geography studies ways in which humans have adapted nature to meet their needs and requirements and to what extent humans are able to utilise their environment in a sustainable manner (Namibia. MoE, 2009b:1).

Additionally, Geography also provides scientific knowledge about physical, environmental and human processes, which form the basis for cross-curricular education (ibid.:1). The significant role of Geography in the implementation of ESD in the Namibian secondary school curriculum involves enabling “learners to explore and come to understand interactions in social, cultural, economic, civic and political spheres, and the relationships between people and their environments” (Namibia. MoE, 2009a:13). However, there is limited practical guidelines outlining how school

teachers must integrate and implement ESD in the teaching of Geography for the purpose of empowering learners with the necessary skills and knowledge to contribute to SD.

Thus, this thesis argues and justifies the identification of a theoretical framework that is intended to illuminate how Geography teachers' capacity could be enhanced to integrate and implement ESD in their teaching practice based on the principles of ESD pedagogy (cf. Chapter 5). The identified theoretical framework will be discussed in terms of how it provided opportunities for Geography teachers to effectively integrate and implement ESD in their teaching practice based on Namibia's policy of learner-centred education. As evidenced by the literature presented in this study, the thesis further argues that effective ESD integration and implementation by Geography teachers through a learner-centred pedagogy that is compatible with ESD principles could support the facilitation of relevant learning outcomes amongst school learners. Hence, contributes towards the provision of quality education within the Namibian school Geography curriculum.

1.5 RATIONALE FOR THE STUDY: WHY QUALITY EDUCATION AND PEDAGOGY?

Gauthier, Dembélé and Bossonnette (2004) explained that pedagogical research indicates that what teachers do in classrooms is the main educational determinant in learners' learning and achievement. They add that it is important to identify and promote the most effective practices that support learners to achieve the desired learning outcomes in the most effective way (Gauthier, Dembélé & Bossonnette, 2004). Similarly, UNESCO (2004b:37) stressed that "teaching and learning is the key arena for human development and change". Upholding the notion that it is at the interface of teaching and learning where the impact of curricula is felt; where teacher methods work well or not; and it is at the same interface where learners are motivated to participate and learn how to learn (UNESCO, 2004b:37). It is accepted that the way teachers teach is of crucial concern in any reform designed to improve quality (ibid.).

Similarly, it has been well emphasised that "at the heart of contemporary debates about teacher quality is the idea that good quality teaching and good quality teachers have a positive impact on learning outcomes" (Bainton, Barrett & Tikly, 2016:7). And

"strong national policies that make teaching and learning a high priority are essential to ensure that all children in school actually obtain the skills and knowledge they are meant to acquire" (UNESCO, 2014a:217). Moreover, in terms of input-process-output measures of quality in education:

> It is generally believed that intervening at the school and classroom levels is crucial in raising the quality of primary education in sub-Saharan Africa as, ultimately, education quality is obtained through pedagogical processes in the classroom where knowledge, skills, dispositions are acquired (Anderson, 2002; Verspoor, 2003 cited in Sifuna & Sawamura, 2010:21.).

Raising the quality of secondary education in a sub-Saharan African context requires similar school and classroom-level interventions to those in primary education as listed above. Taking the discussion further, Sifuna and Sawamura (2010:21) believe that improving the quality of teaching and learning depends on managing the quality of classroom interactions; this is mainly applicable in contexts where learning resources and teacher training are inadequate. However, there is limited data in sub-Saharan Africa with regard to how teachers actually teach in the classrooms and the impact they have on children's learning (ibid.). In spite of this, a number of studies have reported that teacher-centred, lecture-driven pedagogies that are characterised by placing learners in a passive role are dominant in most sub-Saharan African school classrooms (Dembélé & Miaro-II, 2003; Sifuna & Sawamura, 2010; Schweisfurth, 2011; Glewwe & Muralidharan, 2015). Dembélé and Miaro-II (2003:7) further explained that teacher-centred/dominated pedagogies are reported to be the norm in the vast majority of classrooms in sub-Saharan Africa and elsewhere, even in the most affluent countries. In addition to the above, it is also emphasised that:

> Attempts to change the teacher-centred, lecture-driven pedagogy, which places pupils in a passive role and limits their learning to memorizing facts and reciting them back to the teacher appear to have very little impact on classroom practice (Sifuna & Sawamura, 2010:21).

Vavrus, Thomas and Bartlett (2011:12) further explicated a number of challenges constraining the effective implementation of learner-centred pedagogy in a sub-Saharan African context. They include:

a. Without high initial training, teachers largely teach the way they were taught. It is difficult for them to adapt and adopt learner-centred pedagogy.

b. Teacher Training Colleges (TTCs) are not held accountable to primary and secondary schools and even at times to the Ministry of Education. These disconnections too often lead to poor preparation of teachers at TTCs.
c. One of the principal philosophical challenges lies at the heart of learner-centred pedagogy: the notion that knowledge can be co-constructed by teachers and students. The assumption may engender cultural conflict because it challenges the authority vested in teachers as the person in the classroom who possesses knowledge.
d. Teachers' practical concerns about learner-centred pedagogy, especially with respect to school-based professional support and favourable conditions of teaching, are not given due consideration.
e. The examination system is aligned less with active learning and learner-centred pedagogy and more with direct instruction, pushing the teaching practices to be more teacher-centred.

In view of the above, and in the context of quality education, the teacher-centred approach to education has been criticised in favour of a learner-centred approach, because it is argued that:

> Teaching methods that facilitate active student learning rather than promote passivity and rote memorization represent a new and difficult paradigm for many teachers, but one that needs to be understood and put into practice if learner outcomes are to improve (UNICEF, 2000:15).

Dembélé and Oviawe (2007) support the notion of adopting a learner-centred approach to pedagogy, because they believe it helps learners to understand subject matter conceptually, as well as develop their critical thinking and problem-solving skills. They further uphold the notion that, in order for such skills to be developed, "teaching must be learner-centred, participatory, more interactive and adventurous, relying heavily on cooperative learning and inquiry" (Dembélé & Oviawe, 2007:476).

As indicated above, pedagogy is an essential component in any discussion pertaining to quality education in schools; it is also integral to any attempt intended to raise the general quality of teaching and learning as well as improving the delivery of quality education. A number of factors discussed in this section illustrated several contextual and teacher factors constraining the effective implementation of learner-centred pedagogies, which in turn also impacts on the quality of education. Given the above state of affairs, it is important to investigate how the application of a learner-centred pedagogy – in this case, the geographical fieldwork teaching method – contributes to quality education within the Namibian senior secondary school context. Geographical fieldwork teaching method is a learner-centred pedagogy and its value in promoting

ESD and other several learning outcomes in learners is well documented (cf. 2.8 and 2.9). However, like any other leaner-centred pedagogy, fieldwork as a teaching method is not widely integrated into teaching practice nor applied by many teachers in Namibian secondary school classrooms (Kanyimba, 2002; Simasiku, 2012; Anyolo, 2015; Awases, 2015; Ockhuizen, 2018).

As noted above, there is inadequate research and information documenting how learner-centred teaching methodologies such as geographical fieldwork teaching method could enhance the quality of education in Namibian secondary school classrooms. It is against this background that this study is conducted in order to fill the identified gap in knowledge.

1.6 DESCRIPTION OF THE RESEARCH PROBLEM

As discussed in the previous section, there is inadequate information on how learner-centred teaching methodologies such as geographical fieldwork teaching method contribute to quality education within the Namibian senior secondary school Geography curriculum. Similarly, there is a paucity of empirical evidence authenticating how ESD is being integrated into the Namibian senior secondary school Geography curriculum through learner-centred teaching methodologies such as the fieldwork teaching method.

The United Nations Decade of Education for Sustainable Development (UNDESD) promoted embedding ESD into all spheres of learning, emphasising quality education as a priority in wider educational reform (Ofei-manu & Didham, 2014:1). Correspondingly, 'improving quality' has become a key phrase in policy and academic discourses on education in low-income countries, reflecting concerns that the success in increasing enrolment and widening access to schooling is being undermined by low-quality teaching and learning, and consequent low levels of skills and knowledge among school leavers (Nikel & Lowe, 2010:589). There is now a growing international recognition of ESD as an integral element of quality education and a key enabler of sustainable development (UNESCO, 2014b:9).

Based on the above insight, it is important to establish how the integration and implementation of ESD through the application of geographical fieldwork as a teaching

method contributes to quality education in classroom settings. The study is also necessary because there is a need to find out how the implementation of ESD at the classroom level improves quality education in schools. Investigating the impact of ESD on the delivery of quality education addresses the need for working towards achieving Sustainable Development Goal 4 (SDG4), through examining how teaching and learning processes in school classrooms can support the translation of the 2030 Agenda for Sustainable Development into practice at a local level.

1.7 RESEARCH QUESTION

While acknowledging that different authors such as those cited in the preceding sections have established a research space upon which to build, this study sought an answer to the following question:

How does the implementation of Education for Sustainable Development (ESD) through the application of geographical fieldwork as a teaching method contributes to quality education within the Namibian senior secondary school Geography curriculum?

1.8 RESEARCH AIM AND OBJECTIVES

The aim of the study was to identify the issues pertaining to planning, integrating and implementing ESD learning activities through geographical fieldwork as a teaching method in order to explore how the ESD learning processes and learning outcomes contributes to the delivery of quality education within the Namibian senior secondary school Geography curriculum. That was undertaken in two phases. Phase 1 of the study entailed undertaking a reconnaissance study into how secondary school Geography teachers were integrating and implementing ESD through the application of geographical fieldwork in their teaching practice. Phase 2 involved working with teachers to integrate and implement ESD learning activities into their classroom teaching practices through a geographical fieldwork teaching method, and evaluating how that contributes to quality education.

The ultimate goal of the study was to contribute towards building the capacity of classroom teachers to deliver ESD with the intention of working towards achieving

SDG target 4.7 (cf. 2.2) in an attempt to “reorient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development” (UNESCO, 2014b:14).

In order to address the research aim and to answer the research question, the following objectives directed the research process:

- To ascertain Geography teachers’ understanding and application of geographical fieldwork as a teaching method;
- To ascertain Geography teachers’ understanding, conceptualisation, integration and implementation of ESD;
- To examine and analyse factors enabling or constraining the application of geographical fieldwork as a teaching method amongst senior secondary school Geography teachers;
- To work with teachers in order to plan, develop and integrate ESD learning activities into the Geography school curriculum;
- To observe Geography teachers’ implementation of ESD lessons through the application of the geographical fieldwork teaching method;
- To analyse teachers and learners’ views, perceptions and experiences of how the implementation of ESD through the application of geographical fieldwork teaching method impacted on the learners’ learning processes and learning outcomes in the classroom and the field;
- To evaluate how the implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education within the Namibian senior secondary school Geography curriculum.

1.9 RESEARCH METHODOLOGY

The nature of the research study disposed the researcher to adopt a collaborative action research design undertaken within the interpretive research paradigm (Cohen, Manion & Morrison, 2007). Although action research is often associated with the critical paradigm rather than the interpretive paradigm, the primary knowledge interest of this study was “to understand and describe human nature” (Chilisa & Kawulich,

2012:5), as opposed to changing and transforming research participants (ibid.). The aim of the study was to understand Geography teachers' conceptualisation of ESD and to understand how they integrated and implemented ESD in the teaching of Geography through an action research process. Another aim of the study was to understand from the research participants' perspective how the integration and implementation of ESD through the application of fieldwork as a teaching method contributes towards quality education. That was because a research study undertaken within an interpretive paradigm "allows researchers to view the world through the perceptions and experiences of the participants" (Thanh & Thanh, 2015:24). This study was carried out with a similar configuration to the one indicated above.

An action research approach was considered ideal, because it permitted the researcher to collaboratively engage with research participants in order to explore, interpret and evaluate how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education in the context of the study. An action research approach is considered the most appropriate approach for integrating ESD in a formal education setting such as a school or a teacher training institution (UNESCO, 2018). It is argued that through action research teachers become actively engaged in the process of integrating ESD into their teaching practice as opposed to being just instruments for the delivery of ESD messages (UNESCO, 2018:22). This ensures that teachers become actively involved in developing concepts, content, pedagogy, evaluation and research supportive of ESD (ibid.). In this discourse the challenges and problems affecting ESD integration are not just identified, but are also addressed in terms of what needs to be transformed (i.e. either through policy or practice) in order to operationalise effective ESD integration (UNESCO, 2018:22). Based on the above insight, the purpose of action research in the context of this study was twofold. Firstly, it was to explore through a small-scale qualitative survey how classroom teachers conceptualised the integration and implementation of ESD in their teaching practices. Secondly, it was to reflect on the small-scale qualitative survey responses with the teachers in order to identify and address challenges constraining the effective integration and implementation of ESD (cf. 5.4.1 and 6.5). From a collaborative action research viewpoint, the researcher was compelled to develop an in-depth understanding of teachers' ESD practices and then worked with them on how to effectively integrate

and implement ESD in their teaching practice through the development of a relevant classroom intervention that was responsive to the teachers' identified challenges. Thereafter, the researcher gave the research participants an opportunity to express their views, perceptions and experiences on how the implementation of the ESD classroom intervention contributed to quality education. In the context of ESD integration, a collaborative action research approach was beneficial through the processes of "identifying the problem, planning a solution, implementing it, monitoring and evaluating its effectiveness" (Tripp, 2005:3). As indicated earlier, the effectiveness of ESD implementation was determined by evaluating its impact on the delivery of quality education within the Namibian senior secondary school curriculum (cf. 5.8 and 7.2).

The study was carried out in Windhoek, Namibia and undertaken in two phases. Phase 1 involved conducting small-scale qualitative survey with 6 senior secondary school Geography teachers. Phase 2 involved the implementation of an ESD pedagogical intervention by 2 of the 6 Geography teachers who agreed to participate further in the study. The researcher observed all lessons presented by the two teachers in Phase 2 of the study.

Chapter 5 will provide an in-depth discussion of the methodology, including an elaboration on issues pertaining to the validity and trustworthiness of the research findings as well as the ethical implications.

1.10 POTENTIAL VALUE OF THE STUDY

Research studies on pedagogical innovations at the classroom level are hardly ever conducted in Namibia. Most studies conducted on pedagogy, specifically those related to learner-centred pedagogies, tend to focus on the challenges experienced by teachers in applying learner-centred pedagogies (cf. Chaka, 1997; Sibuku, 1997; Van Graan, 1998, 1999; Shinyemba, 1999; Mutwa, 2002; Kapenda, 2008; Awases, 2015; Tshiningayamwe, 2017; Ockhuizen, 2018). These studies make recommendations based on their findings for the professional development of teachers, but without demonstrating how such professional development models are operationalised or are put into practice. Additionally, there is a scarcity of research studies investigating the implementation of ESD that focus on pedagogies aligned with ESD practices or with

practices that evince learner-centred education. Moreover, there are inadequate studies in Namibia revealing how pedagogy, particularly learner-centred pedagogy, contributes to the quality of education at the classroom level. Instead, studies that examine factors affecting the quality of education in schools tend to focus attention on other quantitative variables and indicators associated with quality such as school enrolments figures, dropout rates, teacher-learner ratios and number of girls and boys in schools, without paying much attention to pedagogy and its impact on the learners' qualitative learning outcomes.

This study was framed to address the identified research gaps outlined above; hence the study contributes towards providing an understanding of how the implementation of ESD through learner-centred pedagogy contributes towards the provision of quality education at the classroom level in the Namibian formal school context. The study is expected to make a meaningful contribution to educational practice by not just describing the challenges affecting teachers in applying learner-centred teaching practices, but by addressing the challenges through identifying what needs to be improved in teaching practices. The research study will address the identified challenges by developing a classroom intervention programme, which will be implemented by the research participants in an attempt to establish the impact of the intervention on quality education at the classroom level.

This study is to, my knowledge, the first of its kind in Namibia, focused on the investigation of the integration and implementation of ESD in the school curriculum in relation to quality education in schools. The study is located in the interrelated fields of ESD, quality education and Geography education theory and pedagogy. The study therefore adds to the research literature on geographical education and ESD implementation in a quality education contextual framework. It is anticipated that the insights provided by the study will inform the professional development of Geography teachers on practical ways of the way that ESD can be integrated and implemented in the Geography school curriculum in order to contribute towards quality teaching and learning in classroom contexts. Moreover, it is also expected that the findings of this study will allow recommendations to be made for curriculum development, teacher education and classroom practice with regard to improving the quality of education in schools. The overall expectation of the study is to make a meaningful contribution towards the understanding of how ESD could contribute to quality formal classroom

education in schools within the wider framework of Agenda 2030 of the United Nations Sustainable Development Goals (UNSDGs) (cf. 2.2).

1.11 CLARIFICATION OF SOME KEY CONCEPTS

This section provides clarity on the meaning and usage of certain concepts and terminology in the context of this study, they are:

Education for Sustainable Development (ESD) is used in this study to refer to teaching and learning activities in a formal school classroom context that involves "equipping students with the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing, both in the present and for future generations" (Longhurst et al., 2014:5).

Integration in teaching and learning has many different meanings. Integration in this study is used to refer to the process of infusing/incorporating education for sustainable development (ESD) into the Namibian senior secondary school Geography curriculum. In other words, ESD integration in this study is used in relation to the inclusion of ESD principles of sustainability learning content and learner-centred pedagogy in the teaching of school Geography by classroom teachers (UNESCO, 2018).

Implementation as adopted and explained in this study is used in conjunction with curriculum (i.e. curriculum implementation) in relation to the school curricula and it "entails putting into practice the officially prescribed courses of study, syllabuses and subjects" (Chaudhary, 2015:984). Put differently, it refers to how the planned or officially designed course of study is translated by the teacher into syllabuses, schemes of work and lessons to be delivered to students (ibid.:985). In this study, the concept is also used to refer to the process of executing the infusion of ESD as a cross-curricular theme in the Namibian senior secondary school Geography curriculum at the classroom level.

Learner-centred education in the Namibian context refers to a teaching and learning approach that:

> means that the point of departure is always what the learners already know and can do, then acquiring new knowledge through ways of working which are relevant and meaningful for them, and learning how to apply their knowledge creatively and innovatively (Namibia. MoE, 2009a:4).

Quality education is a complex concept to define or explain. Quality education in this study is understood in relation to how it is being conceptualised and interpreted in lower and middle-income context countries amongst international agencies and researchers (Barrett, Chawla-Duggan, Lowe, Nikel & Ukpo, 2006). Quality education in that regard is defined as education that:

> Enables all learners to realise the capabilities they require to become economically productive, to develop sustainable livelihoods, to contribute to peaceful and democratic societies, and to enhance wellbeing (Tikly & Barrett, 2010:1).

The conceptualisation of quality education in this regard also emphasises various features of a good quality education such as enabling all learners to attain relevant learning outcomes that are essential for achieving national development goals (ibid).

1.12 OVERVIEW OF THE DISSERTATION

The sections above provided an orientation to the study by explaining the motivation and rationale for undertaking the study. A description of the research problem was also discussed including the research question, aims and the research objectives. This was followed by a brief description of the research methodology as well as an explanation justifying the appropriateness of selecting an action research design for the study.

The next section presents an overview of the dissertation in terms of how this dissertation is structured.

Chapter 2 introduces the two concepts which framed this study, namely education for sustainable development (ESD) and geographical fieldwork. The chapter begins by providing an in-depth review of the literature on the evolution, development and implementation of ESD with reference to the formal education school context, i.e. the focus of this study. A discussion on ESD pedagogy, learning content and learning outcomes highlights some aspects of ESD relevant to the study. This will be followed by a discussion of ESD implementation in schools drawn from an international perspective. An overview of ESD in the Namibian formal school system will be

presented. The chapter will then introduce geographical education as well as its contribution towards the implementation of ESD in schools. Thereafter, geographical fieldwork as a teaching method is unpacked and explained in relation to the study. Then the chapter provides some theoretical background underpinning geographical fieldwork as a teaching method. The chapter will then review the literature on studies pertaining to Geography teachers and learners' perspectives on geographical fieldwork as a teaching method and as a mode of learning Geography in schools. Geographical fieldwork as a teaching method and its contribution to ESD will then be explained with reference to the study. A discussion on geographical fieldwork as a teaching method in the Namibian senior secondary school Geography curriculum will conclude the chapter.

Chapter 3 reviews the literature on the concept of quality education in a sub-Saharan African context, which is the wider research context for this study. The chapter begins by providing a definition of the concept of quality education, followed by a presentation and discussion on a framework for understanding quality education in a formal school context. Three intersecting traditions of quality education will be explored in terms of their applicability and relevance to the study. Following that will be a discussion and analysis of the conceptual dimensions of quality education drawing from Nikel and Lowe's (2010) multidimensional fabric model of quality in education, i.e. the conceptual framework of this study. An analysis of the similarities and connections between quality education and ESD will be elaborated upon by drawing on the notion of a learning performance framework (LPF), which is a framework for linking quality education and ESD in formal education.

Chapter 4 presents and discusses the theoretical frameworks and how they informed the study. The theoretical frameworks are the social constructivist learning theory drawing on the work of Lev Vygotsky and the strengths model to ESD. The two frames of reference provided a theoretical and practical guidance for designing and implementing an ESD classroom intervention that was implemented in the study.

Chapter 5 explains the research design, methodology including the research paradigm underpinning the study. The chapter explains the collaborative action research process, including the processes through which data were generated,

analysed and interpreted. A discussion on the ethical implications and the validity of the research findings conclude the chapter.

Chapter 6 presents findings of the collaborative action research process based on the data generated in the study. Data presentation for the chapter is divided into three sections. The first section presents data for Phase 1 of the study, focusing on data generated by the small-scale qualitative survey. It details the Geography teachers' understanding and application of geographical fieldwork as a teaching method. It also presents data pertaining to teachers' understanding, conceptualisation and implementation of ESD in their classroom practices. Additionally, data on factors enabling and constraining teachers' application of geographical fieldwork teaching method are also presented. The second section constitutes the 'reflection' and the 'action planning' aspects of the action research process. The reflection dimension presents and discusses data based on the analysis of Phase 1 findings in terms of teachers' application of geographical fieldwork as a teaching method as well as their conceptualisation, integration and implementation of ESD in relation to their teaching practices. The 'action planning aspect' of the action research study presents data of the researcher working with teachers developing a pedagogical intervention for integrating ESD in the teachers' teaching practice. The third section focuses on Phase 2 of the study, i.e. the 'action' phase of the action research process. It presents a detailed explanation of how the two teachers who participated in Phase 2 of the study implemented the planned geographical fieldwork pedagogical intervention in their classrooms. Chapter 6 will conclude by discussing the geographical fieldwork pedagogical intervention in terms of ESD learning processes and learning outcomes from the perspectives of the research participants.

Chapter 7 is an evaluation of how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education within the Namibian senior secondary school Geography curriculum. It analyses and interprets the findings of Phase 2 of the study using an analytical framework adapted from Nikel and Lowe's (2010) multidimensional fabric model of quality in education.

Chapter 8 presents a summary and reflection of the research process, including the findings of the study. The lessons learned and contributions made are discussed, as well as the implications for further research.

2 EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND GEOGRAPHICAL FIELDWORK

2.1 INTRODUCTION

This chapter explored two concepts, namely education for sustainable development (ESD) and geographical fieldwork as a teaching method, in order to provide the context within which the research study was conceptualised. The chapter begins by providing a contextual profile of the evolution, development and implementation of ESD internationally, focusing on the formal school context. By way of introduction, the chapter delves into the emergence of ESD from 1987, when the term 'sustainable development' (SD) was used for the first time in international policy discourses, until 2015, when the 2030 Agenda for Sustainable Development (SD) was adopted by the United Nations (UN). In this exploration the chapter will also define the meaning of ESD as well as discuss the pedagogical implications associated with the implementation of ESD in schools.

A discussion on Geography as a school subject and its contributions to ESD will follow. The chapter will then examine the literature on geographical fieldwork as a pedagogical approach to teaching Geography in schools. The chapter will also shed light on how the application of geographical fieldwork as a teaching method offers opportunities for Geography teachers to integrate and implement ESD in their teaching practice.

Finally, the chapter will provide a description of the national education context of Namibia, focusing attention on the background of the development of ESD and its implementation in the education system. An analysis of how the Namibia Senior Secondary Certificate (NSSC) Geography curriculum makes provision for the integration and implementation of ESD through geographical fieldwork as a teaching method will conclude the chapter.

2.2 SUSTAINABLE DEVELOPMENT AND THE ROLE OF EDUCATION IN THE SUSTAINABLE DEVELOPMENT AGENDA

The term 'sustainable development' (SD) came into use in policy circles after the publication of the *Brundtland Commission's Report* prepared for the World Commission on Environment and Development (WCED) in 1987 (Redclift, 2005:12). The World Commission on Environment and Development (WCED) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987:43). The WCED enumerated eight critical objectives for SD: (1) reviving growth; (2) changing the quality of economic growth; (2) meeting essential needs for jobs, food, energy, water and sanitation; (4) ensuring a sustainable population level; (5) conserving and enhancing the natural resources base; (6) re-orienting technology and managing risk; (7) linking environmental and economic concerns in decision-making; and (8) re-orienting international economic relations to make development more participatory (WCED, 1987:49).

Other descriptions and meanings of SD have been proposed as well as being explored by others as outlined in Table 2.1.

Table 2.1: Other definitions of the concept of sustainable development.

OTHER DESCRIPTIONS OF SUSTAINABLE DEVELOPMENT (SD)
Sustainable development refers to the sustainability of nature, economy and society. It is a contentious issue since nations, cultures, groups, and individuals interpret the definition to suit their own needs. Thus, some emphasise economically sustainable development as they seek to enhance their consumption levels, while others emphasise environmentally sustainable development as they seek to conserve threatened species. Sustainable development and consequently education for sustainable development are culturally defined.
Sustainable development of nature means avoiding the consumption of resources faster than they can be renewed. We have a duty to preserve natural resources for future generations. The consumption rate should not exceed the regeneration rate. Environmentally damaging activities must be brought under control to restore and protect the integrity of the Earth's system.
Sustainable development of the economy includes sustainable development of nature. Jobs for all and growing living standards remain important targets. For some countries this means more

consumption of natural resources; for others it means new resources-saving technologies and new lifestyles and solidarity. To reach these objectives is one of the biggest challenges in the future.

Sustainable development of society means equal life chances for all. To reach this goal, it is imperative that people in developing countries can satisfy at least their basic needs and that people in industrialized countries agree to strong directives from the international community to limit their consumption of natural resources. However, more important than such actions would be the development of new values, philosophies and ecological behaviour that are seen as promoting new and better ways of living than the old ones, replacing production and consumption structures based on quantity by an economy, a society and individuals focused on qualitative improvements.

Adapted from (Haubrich, Reinfried & Schleicher, 2008:244)

Global understanding of SD has since evolved into a framework developed over decades by the international community of member state governments, United Nations (UN) agencies, multilateral and bilateral development partners, civil society organisations, researchers and scientists (UNESCO, 2016:4). SD may also be interpreted as a social process that can be described as a form of social learning occurring within a localised setting in response to socio-ecological issues that have universal influence (Morgan, 2009).

Most recently, the 2030 Agenda for SD proposed by the UN unites global development and environmental goals in one framework (UNESCO, 2016:5). The 2030 Agenda for SD emerged from the outcome of the three international meetings, namely Rio (1992), Johannesburg (2002) and the Rio +20 (2012) Earth summit. These three international meetings led to the declaration of Agenda 2030, as indicated in Table 2.2.

Table 2.2: Three International Meetings that Led to the 2030 Agenda.

Meeting name	**Outcomes of the meeting**
The **1992 UN Conference on Environment and Development** in Rio de Janeiro, also known as the Earth Summit.	1. **Established Agenda 21**, an action plan intended for governments and other major groups. 2. Participants at the conference in Rio de Janeiro hoped the plan's implementation would result in the widespread changes needed to integrate environmental sustainability and development. 3. Agenda 21 included a special chapter **(Chapter 36)** on the need for education,

	public awareness raising and training to reorient society towards sustainable development.
The **2002 World Summit on Sustainable Development (WSSD)** in Johannesburg	1. The WSSD agenda included fighting severe threats to sustainable development, including chronic hunger, malnutrition, terrorism, corruption, xenophobia and endemic, communicable and chronic diseases. 2. Special emphasis was also placed on women's empowerment, emancipation and gender equality.
The **2012 UN Conference**, commonly referred to as **Rio +20**	1. Rio +20 acknowledged a lack of progress in achieving sustainable development, especially in integrating the three pillars. 2. Rio +20 emphasized the role of good governance and integrated planning in achieving sustainable development.

Adapted from UNESCO (2016:5)

In September 2015 at the 70th Session of the UN General Assembly, member states of the UN adopted a new global development agenda i.e. *Transforming Our World: The 2030 Agenda for Sustainable Development* (UNESCO, 2016). The said development agenda proposed and formulated the 17 Sustainable Development Goals (SDGs) indicated in Table 2.3. The 17 SDGs established global development priorities to the year 2030 (UNESCO, 2016).

Table 2.3: The Sustainable Development Goals (SDGs)

THE 17 SDGs
Goal 1: End poverty in all its forms everywhere.
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
Goal 3: Ensure healthy lives and promote wellbeing for all at all ages.
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5: Achieve gender equality and empower all women and girls.
Goal 6: Ensure availability and sustainable management of water and sanitation for all.
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
Goal 10: Reduce inequality within and among countries.
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.
Goal 12: Ensure sustainable consumption and production patterns.
Goal 13: Take urgent action to combat climate change and its impacts.
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

Adapted from UNESCO (2016:6)

Education is also an important vehicle for the implementation of SD, and it provides an important construct where the perceived tensions between economic, social and environmental development can be harmonised and integrated into a single concept and in pursuit of sustainable wellbeing for all (Didham & Ofei-manu, 2015:97).

Consequent to the WCED, the 1992 *Earth Summit* on SD in Rio de Janeiro declared that education be oriented towards SD (UNESCO-UNEP, 1992). Chapter 36 of *Agenda 21* affirmed that:

> Education, including formal education, public awareness and training, should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of people to address environment and development issues (UNESCO-UNEP, 1992:320).

UNESCO (2016) re-affirmed the role of education in contributing towards the global development goals by highlighting that a good quality education transforms lives in a number of ways (cf. Table 2.4).

Table 2.4: How education is typically linked with other Sustainable Development Goals (SDGs)

Goal 1	Education is critical to lifting people out of poverty.	**Goal 10**	Where equally accessible, education makes a proven difference to social and economic inequality.
Goal 2	Education plays a key role in helping people move towards more sustainable farming methods, and in understanding nutrition.	**Goal 11**	Education can give people the skills to participate in shaping and maintaining more sustainable cities, and to achieve resilience in disaster situations.
Goal 3	Education can make a critical difference to a range of health issues, including early mortality, reproductive health, spread of disease, healthy lifestyles and well-being.	**Goal 12**	Education can make a critical difference to production patterns (e.g. with regard to the circular economy) and to consumer understanding of more sustainably produced goods and prevention of waste.
Goal 5	Education for women and girls is particularly important to achieve basic literacy, improve participative skills and abilities, and improve life chances.	**Goal 13**	Education is key to mass understanding of the impact of climate change and to adaptation and mitigation, particularly at the local level.
Goal 6	Education and training increase skills and the capacity to use natural resources more sustainably and can promote hygiene.	**Goal 14**	Education is important in developing awareness of the marine environment and building proactive consensus regarding wise and sustainable use.
Goal 7	Educational programmes, particularly non-formal and informal, can promote better energy conservation and uptake of renewable energy sources.	**Goal 15**	Education and training increase skills and capacity to underpin sustainable livelihoods and to conserve natural resources and biodiversity, particularly in threatened environments.
Goal 8	There is a direct link among such areas as economic vitality, entrepreneurship, job market skills and levels of education.	**Goal 16**	Social learning is vital to facilitate and ensure participative, inclusive and just societies, as well as social coherence.
Goal 9	Education is necessary to develop the skills required to build more resilient	**Goal 17**	Lifelong learning builds capacity to understand and promote sustainable development policies and practices.

	infrastructure and more sustainable industrialization.		

Adapted from UNESCO (2016:10)

Goal 4 of the SDGs highlights the role of education within an SD agenda by committing countries to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2016:7). Goal 4 of the SDGs and its associated targets advances a model where learning in all its shapes and forms, has the power to influence people's choices to create more just, inclusive and sustainable societies (ibid.). Target 4.7 under SDG 4 was adopted by the United Nations General Assembly (UNGA) and read as follows:

> By 2030 [all countries should] ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (UNESCO, 2016:7).

As indicated in the above quotation, education has a key role to play in ensuring that the SDGs are realised globally. Goal 4 of the SDGs specifically recommends that in order to promote SD, education should be "inclusive, equitable and of good quality" (ibid.). Quality education in the context of ESD will be discussed in detail in Chapter 3.

The next section introduces and discusses ESD in detail by way of describing the meaning of ESD as well as presenting the historical context on the emergence and development of ESD internationally.

2.3 EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

2.3.1 The meaning and development of education for sustainable development

ESD is closely tied into the international discussions on SD, which have grown in scale and importance since *Our Common Future* appeared in 1987, providing the first widely-used definition of SD (UNESCO, 2014b:10).The United Nations Economic Commission for Europe (UNECE) aptly summarised the association of education with SD as follows:

> Education, in addition to being a human right, is a pre-requisite for achieving *sustainable developmen*t and an essential tool for good governance, informed

> decision-making and the promotion of democracy. Therefore, education for sustainable development can help translate our vision into reality. Education for sustainable development develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgements and choices in favour of sustainable development (UNECE, 2005:1).

Additionally, ESD evolved from environmental education (EE) and added to it an integrated SD perspective with a stronger focus on social and economic dimensions (Didham & Ofei-manu, 2015:101). EE came to international prominence in the *Stockholm Declaration* in 1972 and was further elaborated in the *Belgrade Charter* in 1975 and the *Tbilisi Declaration* in 1977 (ibid.). However, since the *Rio Declaration on Environment and Development* in 1992, the importance of education as a primary mechanism for achieving SD has been recognised and there has been a gradual blending of EE and ESD (Didham & Ofei-manu, 2015:101).

However, it is not the intention of this study to engage in renewing the debate on the conceptual differences or similarities between EE and ESD. These have been widely documented elsewhere and do not form part of this study, since the focus of this study is based on ESD and not on EE. Moreover, two equally beneficial strands that have led to the development of ESD have been recognised as "the efforts by sustainable development stakeholders to use education as an instrument to achieve sustainable development, and the efforts by education stakeholders to integrate sustainable development principles into education systems" (Leicht, Combes, Byun & Agbedahin 2018:26). In addition to the above, Table 2.5 shows the international commitments that led to the development of ESD internationally.

Table 2.5: International commitments that led to the development of ESD internationally

1987	**'Our Common Future'** (Report of the World Commission on Environment and Development, also known as the *Brundtland Report*) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
1992	**The United Nations Conference on Environment and Development** (Rio Summit, Earth Summit) Chapter 36 of *Agenda 21* consolidated international discussions on the critical role of education, training and public awareness in achieving sustainable development.

2002	**World Summit on Sustainable Development** (Johannesburg Summit, Rio+10) A proposal for the *Decade of Education for Sustainable Development* was included in the Johannesburg Plan of Implementation. The United Nations General Assembly, at its 57th session in December 2002, adopted a resolution to start the *UN Decade of Education for Sustainable Development (DESD)* from January 2005.
2012	**The United Nations Conference on Sustainable Development (Rio +20)** The international community resolved to "promote education for sustainable development and to integrate sustainable development more actively into education beyond the United Nations Decade of Education for Sustainable Development" (paragraph 233 of the Future We Want).
2013	The Global Action Programme on ESD endorsed by the UNESCO General Conference as a follow up to the DESD.
2014	ESD was included as a target in the **Muscat Agreement** adopted at the Global Education for All Meeting (GEM) and in the proposal for Sustainable Development Goals (SDGs) adopted by the Open Working Group (OWG).
2014	**UNESCO World Conference on ESD** launches the Global Action Programme on ESD.
2015	**World Education Forum: The adoption of the 2030 Agenda for Sustainable Development.** **Goal 4**, which aims to 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'. **Target 4.7**: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Adapted from UNESCO (2014b:10) and Leicht *et al.* (2018:25).

The roots of ESD are usually associated with the United Nations Conference on Environment and Development (UNCED), also known as the Earth summit, held in Rio de Janeiro in 1992, which resulted in the landmark publication of *Agenda 21*, which provided a comprehensive plan of action to be taken globally, nationally and locally by UN Agencies, governments and major organisations (NGOs, CSOs and networks) to reduce the human impact on the environment (Wals, 2009:7). Chapter 36 of *Agenda 21* identified four main features of ESD:

1. Improving access to quality basic education
2. Re-orient existing education programmes to address sustainable development
3. Develop public understanding and awareness, and
4. Provide training programmes for all sectors of private and civil society (UNESCO, 2005a:5).

A number of terms were utilised interchangeably during the 1997 International Conference on Environment and Society (ICES), to make reference to the concept of ESD, such as education for sustainability (EFS), education for sustainable living, education for environment and sustainability, education for sustainable development, and education for a sustainable future (ESF) (UNESCO ICES, 1997 cited in De Leo, 2012:30), but later ESD became the widely accepted term internationally. Education for sustainable development and sustainability education are used interchangeably in this study.

There is no single commonly agreed definition of ESD. Moreover, a number of authors and institutions interpret and define ESD differently depending on their context. UNESCO (2014b) maintains that:

> ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning and is integral part of quality education (UNESCO, 2014b:12).

In addition to the above, UNESCO (2006:17) enumerated seven (7) key features of ESD, they are:

1. **Interdisciplinary and holistic:** learning for sustainable development embedded in the whole curriculum, not as a separate subject;
2. **Values-driven:** it is critical that the assumed norms – the shared values and principles underpinning sustainable development – are made explicit so that can be examined, debated, tested and applied;
3. **Critical thinking and problem solving:** leading to confidence in addressing the dilemmas and challenges of sustainable development;
4. **Multi-method:** words, art, drama, debate, experience, … different pedagogies which model the processes. Teaching that is geared simply to passing on knowledge should be recast into an approach in which teachers and learners work together to acquire knowledge and play a role in shaping the environment of their educational institutions;
5. **Participatory decision-making:** learners participate in decisions on how they are to learn;
6. **Applicability:** the learning experiences offered are integrated into day-to-day personal and professional life;
7. **Locally relevant:** addressing local as well as global issues, and using the language(s) which learners most commonly use. Concepts of sustainable development must be carefully expressed in other languages – languages and cultures say things differently, and each language has creative ways of expressing new concepts.

Anderson (2012:193) describes ESD as "an approach to teaching and learning that is based on the ideals and principles that underlie sustainability and applicable to all types, levels and settings of education". Additionally, the author noted that:

> ESD promotes multi-stakeholder social learning; emphasises the empowerment of communities and citizens; engages with key issues such as human rights, poverty reduction, sustainable livelihoods, environmental education and gender equality in an integral way; and encourages changes in behaviour that will create a more sustainable future.

In 2005 the United Nations Decade of Education for Sustainable Development (UNDESD 2005-2014) (also known as the Decade) was launched with a purpose of re-orienting education to address the challenges of SD (Wals, 2009; UNESCO, 2014b; Leicht *et al.*, 2018). UNESCO (2005b) drafted an *International Implementation Scheme (IIS)* that outlined a broad framework for implementing the UNDESD (2005-2014), which included the following key action areas:

a. Integrating sustainable development into education content, pedagogy and methods adapted to local contexts; and
b. Re-orienting education programmes at all levels to the principles and values of sustainable development, emphasising values, and inter-disciplinary and transformative approaches (UNESCO, 2005b:7).

Reporting on the progress and success of the Decade, Laurie, Nonoyama-Tarumi, McKeown and Hopkins (2016:226) stated that:

> During the decade, ESD matured and grew. Efforts began with raising awareness, moved to capacity building, then to experimentation and finally, implementation of good practice. In effect, the Decade provided proof of concept for formal education and non-formal education settings, including public awareness and training.

In 2013 the 37th Session of the General Conference of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) endorsed the Global Action Programme (GAP) on ESD as a follow-up to the Decade in order "to generate and scale up concrete actions in ESD" (UNESCO, 2014b:9). The GAP further identified five priority action areas to advance the ESD agenda. The identified priority areas are:

1. **Advancing policy:** Mainstreaming ESD in both education and sustainable development policies, to create an enabling environment for ESD and to bring about systemic change.

2. **Transforming learning and training environments:** Integrate sustainability principles into education and training settings.
3. **Building the capacities of educators and trainers:** Increase the capacities of educators and trainers to more effectively deliver ESD.
4. **Empowering and mobilising youth:** Multiple ESD actions among youth.
5. **Accelerate sustainable solutions at local level:** At community levels, scale-up ESD programmes and multi-stakeholder ESD networks (UNESCO, 2014b:15).

In addition to the above, below is a list of international developments that have led to the integration of ESD into many global frameworks and conventions related to key areas of SD:

- **Climate change**: Article 6 of the *United Nations Framework Convention on Climate Change*, and its work programmes;
- **Biodiversity:** Article 13 of the *Convention on Biological Diversity*, and its work programmes;
- **Disaster risk reduction:** *Hyogo Framework for Action 2005-2015*: Building the Resilience of Nations and Communities to Disasters;
- **Sustainable consumption and production:** Sustainable Lifestyles and Education Programme of the *10-Year Framework of Programmes on Sustainable Consumption and Production 2012-2021* (UNESCO, 2014b:11).

As outlined in chapter 36 of *Agenda 21*, all forms and modes of education are mandated to promote the implementation of ESD. Section 2.3.1 drew attention to the meaning and development of ESD internationally. The following section examines the implementation of ESD in a formal school context with particular emphasis on pedagogical processes and anticipated learning outcomes in classroom settings, i.e. teaching and learning processes involving both teachers and learners.

2.4 EDUCATION FOR SUSTAINABLE DEVELOPMENT IN FORMAL EDUCATION: A PEDAGOGICAL APPROACH

The purpose of this discussion is to provide a review of the literature relevant to the practical application of ESD teaching methodologies as well as appropriate learning contents that are required to successfully integrate and implement ESD in classroom settings within a formal education school context. This is in line with the underlying assumption of this study, which is premised on the assertion that successful implementation of ESD at the classroom level is heavily reliant on the appropriate

application of teaching-learning methods as well as on relevant sustainability learning contents (Laurie *et al.*, 2016). To this end, an ideal blend between appropriate teaching/learning methods and relevant sustainability learning content is necessary for contributing towards positive ESD learning outcomes amongst learners in classroom contexts.

In terms of its practical implementation, ESD is a holistic and transformational education process which addresses learning content and outcomes, pedagogy and the learning environment (UNESCO, 2014b:12). The above dimensions characterise the features of ESD implementation in classroom settings within formal school contexts and are further discussed in detail below.

2.4.1 Pedagogy

According to Corney and Reid (2007), there is a dearth of literature on the preferred pedagogical approaches for involving learners in SD. In a 2009 analysis of the mid-term review of the UNDESD, Wals (2009:27) discerned two pedagogical approaches through which ESD was being implemented globally:

1. ESD as a means to transfer the 'appropriate' sets of knowledge, attitudes, values and behaviour, i.e. instrumental approach); and
2. ESD as a means to develop people's capacities and opportunities to engage with sustainability issues so that they themselves can determine alternative ways of living, i.e. an emancipatory approach.

Both approaches to ESD implementation are relevant to this study in terms of delivering ESD in schools. However, an emancipatory approach to ESD is more compatible with the policy of learner-centred education, a guiding policy framework for implementing teaching and learning activities within the Namibian formal school sector (cf. 2.6.2). Didham and Ofei-Manu (2012) pointed out that ESD is not grounded on new pedagogical methods, theories or approaches, but rather it is underpinned by a variety of established educational theories and pedagogies. They further explain that such educational methods and theories include "experiential learning theory, communicative action and reason, critical praxis and critical pedagogy, cooperative inquiry, communities of practice, social learning theory, and farmer field school model" (Didham & Ofei-Manu, 2012:8-9). Equally, Laurie *et al.* (2016:231) maintain that:

> Many ESD pedagogies have been in practice within different disciplinary traditions for years. These pedagogies are now in use in interdisciplinary contexts and applied to pressing issues of sustainability.

Similarly, in a review of the literature on ESD pedagogies, Armstrong (2011:2-3) noted that different concepts have been used by different authors in discussing ESD pedagogies including:

> Concepts such as deep learning; problem-based learning; transformational learning; experiential learning; active learning; action learning; participatory learning; applied learning; inquiry-based learning; critical pedagogy; service learning, and critical emancipatory pedagogy have all been included in ESD pedagogical discussions.

Additionally, an ESD orientation is underpinned by a constructivist epistemology whereby learning is not only characterised by a learner-centred pedagogy but also by active engagements and social interactions amongst learners (Armstrong, 2011; Sewilam, McCormack, Mader & Raouf, 2015). Another key feature of ESD is that it advocates for the implementation of action-oriented and transformative pedagogies that encourage learning through an active and experiential mode which aids a participatory learner-centred pedagogy (UNESCO, 2014b; Evans, Tomas & Woods, 2016). ESD pedagogies are characterised by stimulating learners to be inquisitive and analytical, and to be critical thinkers as well as good decision makers (UNESCO, 2012). Tilbury (2011:29) identified active and participatory learning as key processes underpinning ESD, as such processes inspire learners to “ask critical reflective questions, clarify values, envision more positive futures, think systematically, respond through applied learning, and explore the dialectic between tradition and innovation”.

ESD pedagogies try to change education from teacher-centred to learner-centred instruction and from rote memorisation to participatory learning processes (UNESCO, 2012). In terms of implementation:

> ESD pedagogies are often place-based or problem/issue-based. ESD pedagogies encourage critical thinking, social critique, and analyses of local contexts. They involve discussion, analysis and application of values. ESD pedagogies often draw upon the arts using drama, play, music, design, and drawing to stimulate creativity and imagine alternative futures. They work towards positive change and help pupils to develop a sense of social justice and self-efficacy as community members (UNESCO, 2012:15).

For example, Rieckmann (2018:40) pointed out that ESD implementation necessitates a transition from teaching towards learning, and it takes:

> The form of an action-oriented transformative pedagogy, characterized by elements such as self-directed learning, participation and collaboration, problem-orientation, and inter- and transdisciplinary, as well as the linking of formal and informal learning. Such pedagogical approaches are essential for the development of competencies vital for promoting sustainable development.

Some of the examples of ESD learning methods include approaches that are:

1. Interdisciplinary and holistic;
2. Learner-centred and participatory;
3. Value-driven, promoting critical thinking and exploring all stakeholders;
4. Forward-looking, promoting medium- and long-term planning;
5. Locally relevant, encouraging multilateral collaboration among schools, local actors, and authorities, scientific communities, private sector, and NGOs, etc. and revealing global issues and connections as part of everyday life, whether in a small village or a large city (Alampei, Psallidas & Scoullos, 2013:110).

In addition to the above, ESD pedagogies form part of progressive pedagogies (PP) (Gadotti, 2010; Armstrong, 2011; Ofei-manu & Didham, 2014), which denote the integration of a collection of teaching approaches under the ESD framework to extend practice beyond individual theories, methods or tools (see Table 2.6 below).

Table 2.6: Aspects and characteristics of productive pedagogies (PP)

Aspects of progressive pedagogies (PP)
1. Emphasising the psychosocial dimensions of teaching/learning; 2. Stressing the value of experience from active participation in research and community-based learning as well as the individual learner's personal experience; 3. Encouraging students' critical reflection on teaching processes and organising teaching to focus on real-world problem solving; 4. Enhancing learners' ability to analyse and comprehend how their own actions and behaviours are influenced by and impact on these processes; 5. Promoting learning aimed at overcoming the anthropocentric nature of traditional pedagogies; and 6. Creating a curriculum that includes materials meaningful to the learners and also significant for the health of the planet.
Characteristics of progressive pedagogies (PP)
• Critical reflection and practice, and problem solving; • Action/experience-oriented, student-centred learning;

• Knowledge production through iterative interaction; • Life-long learning; • Cyclical process of collective (cooperative) inquiry.

Adapted from Ofei-manu and Didham (2014:5)

Another dimension of the ESD pedagogies is that of establishing and promoting cooperative learning through group work amongst learners (Ofei-manu & Didham, 2014). Chapter 3 section 3.6 provides a detailed discussion on cooperative learning within an ESD context. In addition to the above, Laurie *et al*. (2016) reported that primary and secondary education are transformed by ESD pedagogies as much as they are by the sustainability content. Successful delivery of ESD in classroom contexts is not exclusively dependent on pedagogy, but it is also reliant on other dimensions of ESD. The next section discusses ESD learning content as an integral dimension of ESD.

2.4.2 Learning content

ESD advocates learning content that "integrates critical issues, such as climate change, biodiversity, disaster risk reduction (DRR), and sustainable consumption and production (SCP), into the curriculum" (UNESCO, 2014b:12). Moreover, Gadotti (2010:205) is of the view that ESD learning contents included in the curriculum should be relevant to the learners and can only be meaningful to them if such content specifications are also constructive for the planet. Pigozzi (2007) pointed out three pillars of SD that give shape and content to learning for SD:

- **Society**: understanding social institutions and their role in change and development, as well as the democratic and participatory systems that give opportunity for the expression of opinion, selection of governments, forging of consensus and the resolution of differences.
- **Environment:** Awareness of the resources and fragility of the physical environment and the effects on it of human activity and decisions, with a commitment to factoring environmental concerns into social and economic policy development.
- **Economy:** Sensitivity to the limits and potential of economic growth and their impact on society and on the environment, with a commitment to assess personal and societal levels of consumption out of concern for the environment and for social justice (Pigozzi, 2007:28).

Pigozzi (2007) further explained that the content of ESD must equally reflect these three pillars, i.e. society, environment and economy, and it must be delivered to learners in a holistic and integrated manner (2007:32). As indicated above, re-orienting

education content to include SD is beneficial for both learners and society. In this regard UNESCO (2012) identified the contributions of SD to education when education integrates sustainability issues into the curriculum. Such contributions are articulated as follows:

- **Sustainability adds purpose to education:** education that promotes sustainability, global stability and resilience societies could help create a more sustainable future for the planet;
- **Sustainability gives a common vision:** sustainability also positions education to make a concrete contribution to a better world;
- **Sustainability gives relevance to the curriculum**: education that is re-oriented to address sustainability examines real-life problems in the community and explores solutions, thereby adding relevance to the curriculum by connecting it to the learners' felt needs;
- **Sustainability gives concrete examples of abstract concepts:** the cross-cutting themes of sustainability and its related issues (e.g. climate change and biodiversity) that challenges local communities provide excellent real-life examples of abstract concepts contained in the curriculum. Such local examples also increase the relevance of the curriculum;
- **Sustainability can save pupils' lives:** By adding topics related to local natural disasters (e.g. the ways that human activity can exacerbate or ameliorate conditions in disaster-prone areas) to the curriculum, the lives of children and community members will be more secure (UNESCO, 2012:36).

ESD content is not derived only from a single discipline, but rather all disciplines in the school curricula can contribute to ESD in their respective ways (UNESCO, 2012). This is because "ESD and SD pose such broad and encompassing challenges that they require contributions from many disciplines" (2012:41). Chapter 4, section 4.2.2 provides a broader explanation on how different disciplines of school curricula contribute to ESD learning content. ESD content supports the incorporation of critical sustainability challenges into the curriculum in an effort to enable learners to understand and take action for a better future in a changing world (Leicht, Heiss & Byun, 2018). The following section discusses ESD learning objectives and outcomes as key components of ESD.

2.4.3 Learning objectives and outcomes

ESD aims to develop competencies that enable and empower individuals to reflect on their own actions by considering their current and future social, cultural, economic and environmental impacts from both a local and a global perspective (Rieckmann, 2018:39). ESD teaching and learning processes should empower learners by

developing their Sustainability Competencies (SC). Ofei-manu and Didham (2014:28) explained that “Sustainability competencies (SC) articulate the qualities/attributes that learners need to develop in order to engage in sustainability issues and contribute to SD; they consist of a diversity of knowledge, skills and values” (cf. 3.6).

Developing key Sustainability Competencies is viewed as a crucial component for empowering individuals for a sustainable society. Table 2.7 indicates key competencies seen as crucial for advancing SD. According to Rieckmann (2017), “ESD can develop cross-cutting key competencies for sustainability that are relevant to all SDGs” (2017:10). Such competencies are essential for all learners of all ages globally (ibid.). Such competencies include cognitive, affective, volitional and motivational elements; hence they are an interplay of knowledge, capacities and skills, motives and affective dispositions (ibid.). Sewilam *et al. (*2015:224) describe what Sustainability Competencies entail:

> In order to behave in a sustainable manner, one needs the ability to communicate, to work in teams, to ask critical questions, to challenge one’s own and others’ behaviour, to think in a holistic manner and to think about issues in the long term as well as being capable of taking action (Sewilam *et al.*, 2015:224).

Table 2.7: Key Competencies for Sustainability

Key Competencies for Sustainability
Systems thinking competency: the ability to recognise and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.
Anticipatory competency: the ability to understand and evaluate multiple futures – possible, probable and desirable; to create one’s own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.
Normative competency: the ability to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflict of interests and trade-offs, uncertain knowledge and contradictions.
Strategic competency: the ability to collectively develop and implement innovative actions that further sustainability at the local level and further afield.

Collaboration competency: the ability to hear from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (emphatic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.

Critical thinking competency: the ability to question norms, practices and opinions; to reflect on own one's values, perceptions and actions; and to take a position in the sustainability discourse.

Self-awareness competency: the ability to reflect on one's own role in the local community and (global) society; to continually evaluate and further motivate one's actions; and to deal with one's feelings and deal with one's feelings and desires.

Integrated problem-solving competency: the overarching ability to apply different problem-solving frameworks to sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the above-mentioned competences.

Adapted from Rieckmann (2017:10)

Rieckmann (2017:10) concluded that "the sustainability key competencies represent what sustainability citizens particularly need to deal with today's complex challenges, while the ESD learning objectives deal with achieving the SDGs". It is impossible for teachers to teach competencies, but rather competencies are attained through experience and reflection (ibid.).

The following section explores ESD implementation in schools in order to offer insights into the teaching and learning processes involved by providing some international and regional perspectives.

2.5 EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IMPLEMENTATION IN SCHOOLS: SOME INTERNATIONAL AND REGIONAL PERSPECTIVES

According to Kopnina (2012), *Agenda 21* (cf. 2.3.1) formally signalled the introduction of SD as well as ESD discourses into school curricula throughout the world. Benavot (2014) revealed that by 2005 a large majority of UN member countries across the world had introduced policies that led to the integration of ESD into primary and secondary schools in response to the UNDESD (cf. 2.3.1) Benavot (2014:33) eloquently explained that:

> In many countries ESD was introduced as an umbrella framework to integrate so-called 'adjectival' educations: climate change education, health education, peace education, environmental education, human rights education, global citizenship education, HIV/AIDS education, and multicultural education. In other countries ESD is formulated as a stand-alone policy, isolated from policies concerning educational planning and budgeting, as well as policy levers for improving teaching and learning in the classrooms. In a few countries the mainstreaming of ESD is more systemic

However, "there is no universal model of ESD; each country thus has to define its own sustainability and education priorities and actions" (UNESCO, 2005b; Nguyen, 2017:1). But in teaching and learning terms, many countries in the world have incorporated ESD as a cross-curricular theme in primary and secondary school curricula (Benavot, 2014). In spite of the fact that ESD has been integrated into school curricula across the world, not much is known "about the effectiveness of ESD programs or classroom teaching practices" (2014:26). The above can be attributed to a number of structural and contextual challenges that impede the successful integration and implementation of ESD in different national contexts across the world. In elaborating on that, Benavot (2014:34) identified a number of constraints that hamper the successful implementation of ESD:

> Narrow or divergent understandings of ESD, the absence of clearly articulated national ESD strategies, little grass-roots or community interest, an under-resourced coordinating agency unable to facilitate communication between national policies and local contexts.

For example, Bednarz, Petersen and Bednarz (2007:171) reported on the slow implementation of ESD in the United States of America (USA) by revealing that "ESD was not strongly supported by the school curricula or textbooks and there was a lack of understanding about the nature and value of SD". Integrating teaching and learning methodologies associated with ESD (cf. 2.4.1) by teachers has proved to be one of the challenges constraining the effective implementation ESD at the teaching and learning interface in most countries. Sewilam *et al.* (2015:224) observed that:

> Implementing active learning methodologies into an assessment-dominated system can challenge the dominant culture and norms of that system. Pressure to cover the content, achieve in examinations and conform to the dominant discipline and teaching culture within the school can all hinder the integration of active learning methodologies into the classroom. Such issues have been identified at an international level.

Consequently, integrating active learning methodologies that deal with SD issues can provide further challenges for educators (ibid.). To put this point into an ESD perspective, Sewilam *et al.* (2015) undertook a research study on the introduction and implementation of ESD into Egyptian schools. Their study identified barriers to the successful implementation of ESD, including limited ESD resources available in schools, the low value placed on ESD, overcrowded classrooms, and the dominance of assessment in an examination-driven curriculum (Sewilam *et al.*, 2015). A combination of barriers listed above constraining teachers from successfully implementing ESD into their classroom practices is not only unique to Egypt. Similarly, Gadotti (2010:230) revealed that "one impediment to more sustainable schools is the rigidity of 'prescribed' curricula and of official examination systems, which prevent teachers' creativity and innovation in teaching/learning". Adding to the discussion, Kieu, Singer and Gannon (2016:855) reported and recommend that:

> Research in developing countries reveals the prevalence of top-down teaching approaches and traditional teaching styles with an emphasis on knowledge-based teaching, and this may be one of the main obstacles for effective ESD implementation. It is thus critical to reform the teacher education system to achieve effective ESD.

Teacher factors are also acknowledged to be limiting the effective implementation of ESD in the South African formal school curricula. Lotz-Sisitka (2011:34) noted that there is a "need to improve South African teachers' knowledge and pedagogical content knowledge (capacity to teach) of environmental and sustainable development content, values and skills". A study by Dube (2012) examined the implementation of ESD and EE within the South African formal school curricula. The study identified existing policy-practice gaps with regard to teachers' attempts to implement EE and ESD using learner-centred approaches to teaching and learning (ibid.). Research results indicated that some of the teachers who participated in the research study preferred using traditional teacher-centred approaches because such methods aided them to complete the syllabus in time for their learners' examinations (Dube, 2012).

The discussion above has contributed to an understanding of how ESD is being integrated and implemented in primary and in secondary school contexts from both the regional and international perspectives. The discussion has highlighted some contextual as well as structural constraints affecting the effective implementation of

ESD in school classroom contexts. As discussed in the previous chapter, the purpose of this study is not only to identify the challenges affecting the effective implementation of ESD, but also to contribute towards addressing the identified challenges by instituting classroom teaching practices consistent with the pedagogy of ESD. The intention of the study is not to provide answers to resolve all the existing challenges hampering the effective implementation of ESD in school classroom contexts. However, the study intends to demonstrate one of the ways through which ESD can be effectively integrated and implemented in a classroom. Most importantly, the study intends to contribute towards addressing the need to evaluate the effectiveness of ESD classroom practices (consistently based on ESD pedagogy) by establishing the impact of such practices on the quality of teaching and learning processes (cf. Chapter 7).

The following section discusses and explains the implementation of ESD in the Namibian formal education context in relation to teaching and learning in schools.

2.6 EDUCATION FOR SUSTAINABLE DEVELOPMENT IN NAMIBIAN SCHOOLS

This section introduces and discusses ESD in the Namibian formal school system. The discussion begins by presenting a brief historical background and development of ESD in Namibia. This will be followed by a description of how ESD is being implemented in the formal school curriculum.

2.6.1 A background to education for sustainable development in Namibia

International trends and developments in the ESD arena have contributed significantly to the introduction and development of ESD in Namibia. The emergence of the 2005 UNDESD (cf. 2.3.1 and 2.5) drew global attention to the concept of ESD. As a consequence of this and other international policy imperatives, Namibia became a signatory to the major international policy imperatives that spearheaded the adoption and integration of ESD into its education system. In 2009, the Namibian government (Republic of Namibia, 2009: viii) declared the following:

> The government of the Republic of Namibia recognizes the development challenges facing the country and being signatory to many international agreements and conventions is keen and aware of its responsibilities to implement measures that promote sustainable development

> through different modes of education. For this reason, the government recognizes education for sustainable development (ESD) as an opportunity to continuously build its citizens' capacity towards implementing its sustainable development objectives and improve the quality of life.

In 2009 the Namibian government developed its *Education for Sustainable Development Implementation Strategy* document as a response to the UNDESD's call to integrate SD principles into education (Republic of Namibia, 2009). The ESD implementation strategy was developed in order to provide an opportunity for educating the Namibian public on the importance of SD as well as to provide guidelines on how various stakeholders in the country could contribute to the vision and goals of SD through education and training (ibid.). Additionally, the UNDESD was also instrumental in contributing to the introduction of ESD in Namibia's higher education institutions as stated by Kanyimba, Hamunyela and Kasanda (2014):

> Namibia joined the rest of the world in conceiving how the UNDESD could be realised in Namibian higher education institutions (HEIs). The Green Plan, Namibia's blue print for sustainable development, which was presented at the United Nations Conference on Environment and Development and the First National Consultative Seminar on Education for Sustainable Development in Namibia, expressed the following: Namibian higher education institutions (HEIs) need to mainstream ESD into the education, research and development programmes. The Consultative Seminar furthermore urged HEIs in Namibia to educate and train people who would have the capacity to innovate and provide appropriate knowledge and technological solutions for sustainable development (Kanyimba, Hamunyela & Kasanda, 2014:243).

The subsequent section provides an account of the implementation of ESD in the Namibian formal school curriculum.

2.6.2 The implementation of education for sustainable development in the formal school curriculum

The Ministry of Education through the National Institute for Educational Development (NIED) is responsible for designing and disseminating school curricula. The objectives of NIED in that regard are two-fold, namely to integrate ESD principles into the formal education curriculum, and to develop learning and teaching support materials for ESD (Republic of Namibia, 2009:16). Additionally, schools are regarded as key places

through which ESD should be implemented, and the functions of schools in this regard should therefore be to:

- Provide in-service professional development opportunities for teachers in education for sustainability including developing teaching resources;
- Embed sustainability in the curricula;
- Integrate ESD into early childhood education;
- Identify and coordinate sustainability initiatives directed at schools, e.g. waste minimisation, school ground greening and energy conservation;
- Work in partnership to expand the whole-school, system-wide approach to education for sustainability in schools;
- Prepare learners with the knowledge, skills, perspectives and practices they need to be environmentally responsible citizens (Republic of Namibia, 2009:22).

With regard to the implementation of ESD in schools, the Ministry of Education highly recommends a learner-centred approach as the ideal approach to teaching and learning in Namibian schools (Namibia. MoE, 1993; 2009a). Such an approach to teaching and learning entails that:

- The starting point is the learners' existing knowledge, skills, interests and understanding, derived from previous experience in and out of school;
- The natural curiosity and eagerness of all young people to learn to investigate and to make sense of a widening world must be nourished and encouraged by challenging and meaningful tasks;
- The learners' perspective needs to be appreciated and considered in the work of the school;
- Learners should be empowered to think and take responsibility not only for their own, but also for one another's learning and total development (Namibia. MoE, 1993:60).

A learner-centred approach to education unites terms such as active learning, exploration and self-responsibility, consideration of learners' prior knowledge and skills, and construction of knowledge rather than passive participation of students (ibid.).

Furthermore, the Ministry of Education views a learner-centred approach to education as an essential component of education in preparing learners for a knowledge-based society as envisaged in *Namibia's Vision 2030* (Namibia. MoE, 2009a). The features of a knowledge-based society in this context include:

> The effective and wise use of existing knowledge and the creation of new knowledge; sharing and using knowledge effectively through a dynamic information infrastructure, using high-level technology and research to create innovations and sustainable development for people and the environment; flourishing entrepreneurship in a growing production-based economy (Namibia. MoE, 2009a:7).

Moreover, the *Vision 2030* document articulates the kind of society that Namibia strives to become and the way forward to achieving it. Furthermore, the aims of the formal national school curriculum prescribe the following:

> The aims of the curriculum in relation to developing an environmentally sustainable society are to provide the scientific knowledge and skills, and attitudes and values needed to ensure that the environment is respected and sustained; and to develop the ability to make environmentally wise choices in terms of family development, as well as in economic activities (Namibia. MoE, 2009a:8).

The Ministry of Education prescribes a cross-curricular learner-centred approach to the implementation of ESD in Namibian schools, which refers to the teaching and learning of "themes or topics common to several subjects or areas of learning, e.g. HIV/AIDS, ecology, human rights and democracy, substance abuse, population education, health, ICTs" (Namibia. MoE, 2009a:4). Furthermore, each of the issues associated with cross-curricular teaching and learning deals with particular risks and challenges in Namibian society, such as:

- the challenges and risks we face if we do not care for and manage our natural resources;
- the challenges and risks caused by HIV and AIDS;
- the challenges and risks to health caused by pollution, poor sanitation and waste;
- the challenges and risks to democracy and social stability caused by inequity and governance that ignores rights and responsibilities;
- the challenges and risks of living in an information society;
- the challenges and risks we face from globalisation (Namibia. MoE, 2009a:4).

All learners need to understand the nature of these risks and challenges, and how they impact on their society and the quality of people's lives now and in the future (Namibia. MoE, 2009a:4). Also, learners are urged to understand how such risks and challenges can be addressed on a personal, local, national and global level, and how they can play a part in addressing those risks and challenges in their own school and local community (ibid.).

With regard to the benefits of implementing ESD in Namibian schools, Tshiningayamwe (2017:107) explained that “ESD has potential to strengthen and expand policies on learner-centred education in Namibia by helping to translate such policies into practices”. In contrast, slight attention is devoted to ESD in the school curriculum and teachers are not able to persuade the learners about the significance of ESD (Tshiningayamwe, 2011; 2017).

In addition to the above, there is a scarcity of research on the implementation of ESD in Namibian classrooms. In spite of that, Anyolo's (2015) study confirms the integration of ESD as a cross-curricular theme/topic in the existing school subjects in Namibian schools. The study further revealed that teachers understood ESD as a process of acquiring knowledge about the environment and the sustainable utilisation of environmental resources for the benefit of future generations (Anyolo, 2015). In terms of its practical implementation in classroom settings, the study reported that teachers employ traditional teaching methods such as the lecture method as well as the ‘question and answer’ methods as opposed to the prescribed learner-centred teaching methods (ibid.). Based on these findings, Anyolo (2015) recommended that the professional development of teachers was required in order to contribute positively towards the successful implementation of ESD in school classrooms.

This study supplements and expands on the study of Anyolo (2015) by supporting practising classroom teachers to re-orient their teaching style from teacher-centred approaches to more learner-centred approaches (cf. 6.5). Re-orienting teaching from teacher-centred to learner-centred instruction is considered one of the most appropriate approaches for integrating ESD at the classroom level (cf. Laurie *et al.*, 2016) (cf. 2.4.1). Chapter 6 provides a detailed discussion on the integration and implementation of ESD in the context of this study (cf. 6.5 and 6.6).

The following section discusses geographical education and its role as a vehicle for delivering ESD.

2.7 GEOGRAPHICAL EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

Geography is the science which seeks to explain the character of places, the distribution of people, features and events, and the way they occur and develop over the surface of the earth (Reinfried & Hertig, 2011:6). A number of scholars have documented the contributions of Geography to ESD (Bagoly-simó, 2014; Bednarz, Petersen & Bednarz, 2007; Corney, 2006; Firth & Winter, 2007; Hellberg-Rode, Schrüfer & Hemmer, 2014; Haubrich, Reinfried & Schleicher, 2008; Sim & Stoltman, 2013; Sánchez, 2011). According to Reinfried and Hertig (2011:3) geographical education is a scientific discipline grounded in the domain of Geography and education, which looks into the conditions, principles and methods of domain-specific teaching and learning. Geographical education selects and structures geographical content knowledge, skills and attitudes in such a way as to enable learners to master them (2011:3).

Moreover, the discipline of Geography exhibits immense closeness to the themes and skills of ESD (Bagoly-Simó, Hemmer & Reinke, 2018). Geography as a field of knowledge has a particular role within teaching about sustainability (Sim & Stoltman, 2013:468). According to the authors, the discipline bridges the physical sciences and the social sciences, since it deals with the spatial perspective of the natural environment and the interactions of both the natural environment and humans (2013:468). Most importantly, “Geography has a major responsibility in delivering education for sustainable development, especially because the geographical concepts of place and space are key dimensions for the analysis and pursuit of sustainability” (Sánchez, 2011:158). Reinfried and Hertig (2011:1) pointed out that geographical education selects and structures geographical content knowledge, skills and attitudes to enable learners to understand the human-environment-society processes in the world and to achieve geographical literacy.

Correspondingly, the contributions of the discipline of Geography to ESD are well documented. For example, the *Lucerne Declaration on Geographical Education for*

Sustainable Development (Haubrich, Reinfried & Schleicher, 2008:232) acknowledged the contribution of the discipline of Geography to ESD by declaring that:

> Nearly all the 'action themes' highlighted in the United nations Decade of Education for Sustainable Development, including environment, water, rural development, sustainable consumption, sustainable tourism, intercultural understanding, cultural diversity, climate change, disaster reduction, biodiversity, and the market economy have a geographical dimension.

Given its interdisciplinary nature that involves integrating the natural and social sciences, school Geography is seen by the international community as an appropriate vehicle for ESD (Butt, Hemmer, Hernando & Houtsonen, 2006; Raselimo, 2017; Dube, 2012). Grindsted (2015:13) noted that Geography contributes to ESD in three ways as outlined below:

1. Geography's strong tradition in the human-environment theme provides a methodological basis for dealing with issues of sustainability;
2. The spatio-temporal dimensions of sustainability call for geographical approaches to be able to understand the dynamics, complexity and interactions on various scales;
3. Geographers find their discipline provides an integrative knowledge bridge between the natural and social sciences.

As illustrated in sections 2.4.1 and 2.4.2, two essential aspects are required for implementing ESD successfully, namely ESD learning content, and the use of appropriate ESD pedagogies. Consistent with this statement, Geography contributes to the ESD agenda by virtue of its knowledge domain which includes geographical content knowledge (encompassing both the physical and human dimensions of the discipline) as well as its geographical inquiry skills domain. Despite Geography's role and potential in contributing towards ESD, a number of structural and contextual implementation challenges have been identified. Writing from South Africa, Wilmot (2017:131) states that:

> In spite of good progress having been made in integrating ESD into school Geography at the level of policy, the enactment of ESD by teachers at the micro level of the classroom is an ongoing and as yet unresolved challenge.

Dube (2012) identified Geography teachers' limited knowledge of ESD as a barrier hindering teachers from effectively integrating ESD into their classroom lessons. On

the other hand, structural constraints resulting from curricular reforms may constrain teachers from applying ESD pedagogies, thus limiting the effective implementation or inclusion of ESD in Geography classes and lessons. The latter view is derived from Le Grange and Ontong's (2018) analysis of the outcomes emanating from the school Geography curriculum reform process in post-apartheid South Africa. The authors described the contemporary South African school Geography curriculum as a prescriptive and textbook-based curriculum characterised by transmissive methods of teaching as opposed to social constructivist approaches (Le Grange & Ontong, 2018). The authors postulate that such curriculum orientation may result in Geography teachers adopting behaviourist pedagogical practices in classrooms (2018:31). They call for an integrated school Geography curriculum as a mitigating factor in response to the shortcomings that may be presented by the curriculum reform developments. In the same way, behaviourist pedagogical practices militate against the inclusion of ESD in the Geography curriculum, thus leading teachers to focus on knowledge-based teaching (Kieu, Singer & Gannon, 2016) (cf. 2.5)

There is a scarcity of studies verifying Geography teachers' teaching practices that provide evidence of the contributions of the discipline of Geography as a mode for delivering ESD in classroom settings. Empirical studies are required to provide conclusive evidence on how teaching and learning methodologies in Geography contribute to the delivery of ESD through teaching and learning (Corney & Reid, 2007). An assumption underpinning this study is based on a conviction that the application of geographical fieldwork, underpinned by a social constructivist pedagogical approach, can illuminate our understanding of how school Geography contributes to the effective implementation of ESD. This is because geographical fieldwork as a teaching method that is informed by a socio-constructivist pedagogical approach is consistent with the principles of ESD pedagogies.

In the sections which follow the researcher introduces and explains geographical fieldwork as a teaching method, geographical fieldwork and ESD, and finally, geographical fieldwork in the Namibia secondary school Geography curriculum.

2.8 GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD

This section introduces and discusses geographical fieldwork as a teaching method in Geography. The section will explore the meaning, the role and the value of geographical fieldwork as a leaner-centred method for the teaching of Geography in schools. Teachers' and leaners' perspectives on geographical fieldwork as a mode of teaching and learning will also be identified and elaborated upon. An explanation of constraints and enabling factors that affect the enactment of geographical fieldwork in Geography classrooms from around the world will be presented.

2.8.1 Definition and description

According to Lonergan and Andresen (1988:64), 'the field' can be defined as any place "where supervised learning can take place via first-hand experience, outside the constraints of the four-wall classroom setting". Fieldwork covers "a wide variety of educational methods and experiences" (Gold, Jenkins, Lee, Monk, Riley, Shepherd & Unwin,1991:23). The term fieldwork "is used in disciplines and subject areas such as Geography, biology and environmental studies to denote educational activities which usually include observation, survey and research of phenomena and processes outside the classroom and laboratory settings" (Lai, 1999:7). Moreover, the natural environment is often an important component of field study (ibid.). In Geography and social studies such fieldwork may also take place in built-up environments such as urban and industrial areas (Lai, 1999). Lock (1998) further notes that fieldwork could also be described as visits to museums, zoos, science centres and nature education centres.

This research study investigates fieldwork in the context of school Geography in relation to education activities that include observation, survey and research activities outside the classroom (cf. 2.10). The author drew on geographical fieldwork literature from secondary schools and from higher education. This was done because there is limited data available pertaining to the implementation of fieldwork in schools compared to the implementation of fieldwork in higher education settings. Therefore, drawing on a combination of geographical fieldwork literature from secondary schools and from higher education enriched the literature.

2.8.2 Geographical fieldwork as a pedagogic device

Scholars around the world have from time to time documented the benefits of fieldwork as a pedagogic device for the teaching of Geography. For instance, Dummer, Cook, Parker, Barrett & Hull, (2008) specified that fieldwork provides students with the opportunity to test ideas and concepts from the literature against the 'real world' of the field, to apply methods and techniques of data collection and observation, and to work effectively in groups with one's peers. Bliss (2006:157) states that "Fieldwork is an essential part of the study of Geography and it is a tool that facilitates the understanding of geographical inquiry". Fieldwork gives students the opportunity to develop a range of subject-specific skills (mapping, data collection and analysis) and transferable skills, such as independent learning and problem-solving (Andrews, Kneale, Sougnez, Stewart & Stott, 2003; Shah & Treby, 2006); it also encourages the development of interpersonal skills (Boyle, Conchie, Maguire, Martin, Milson, Nash, Rawlinson, Turner & Wurthmann, 2003) and promotes active rather than passive modes of learning (Haigh, 1996; Kent, Gilbertson & Hunt, 1997).

Remmen and Frøyland (2014) explained that fieldwork outside the classroom can be implemented as teacher-led field excursions or student-directed discovery fieldwork or as an intermediate approach between the two. Scholars such as DeWitt and Storksdieck (2008), Kwan and So (2008), and Remmen and Frøyland (2014) prefer the more learner-centred approaches to fieldwork in view of the fact that learners who actively engage with phenomena outdoors develop deeper cognitive and affective learning. They maintain that "being actively involved in one's own learning process can promote inquiry-based learning" (Remmen & Frøyland, 2014:104). In the same vein, this research study is designed with the same configuration in mind, i.e. to investigate how a learner-centred approach to teaching Geography impacts on learning outcomes amongst learners. That is because learner-centred approaches to teaching and learning are central to the concepts of ESD and quality education (cf. 2.4.2 and 3.5), which are also central to this study. According to Fien (2001:24), learner-centred and enquiry-based approaches to learning can contribute to learners' developing capacities for:

- identifying questions, issues and problems as the starting point for their own learning;

- being active participants in meaningful learning;
- applying a wide range of intellectual, social, practical and communication skills and abilities;
- clarifying, analysing and challenging attitudes and values through an open interchange of ideas and opinions; and
- exercising political literacy through an understanding of the social world and how to participate in it.

Moreover, a learner-centred approach to education is essential in promoting active, inquiry-based learning that leads to a deeper approach to learning (Oost, De Vries & Van der Schee, 2011). This is because, learning through inquiry involves learners in the act of asking questions and making predictions, planning investigations, collecting data, interpreting data and constructing conclusions, and communicating results (Minner, Levy & Century, 2010; Remmen & Frøyland, 2014).

Another beneficial aspect of fieldwork as a teaching method was identified by Oost, De Vries and Van der Schee (2011:309), who emphasised that, as a consequence of "its active and enquiry-driven character, fieldwork is seen as an important way to develop geographical understanding of the world, during which cognitive and affective learning reinforce each other". In addition, Stoddart (1986) revealed that the acquisition of 'real' geographical knowledge takes place in the field as a result of an interaction of physical, mental and emotional experiences.

Moreover, a broad variety of enquiry skills can also be developed through fieldwork. They include observation, data collection, data analysis, mapwork and investigative skills (Job, Day & Smyth, 1999). With regard to the implementation process, classroom teachers are cautioned to integrate fieldwork with classroom learning activities in order to facilitate a deep approach to learning amongst their learners (Remmen & Frøyland, 2014). It is suggested that fieldwork be undertaken in three phases, namely preparation; field activities; and follow-up or the de-briefing phase (Orion, 1993; Kent, Gilbertson & Hunt, 1997; Foskett, 1999).

In this regard, Oost, De Vries and Van der Schee (2011) proposed four main guidelines and conditions that teachers could follow in an attempt to integrate fieldwork as an

effective teaching strategy for the purposes of promoting both a deep approach to learning Geography as well as promoting a deep geographical understanding of the world. The following guidelines and conditions are suggested:

1. **Fieldwork should be enquiry-driven** and more or less student-centred;
2. **It is important that the structural integration** of fieldwork at classroom level is complete and thorough, i.e. the preparations of students should be profound and thorough, and teachers should have a profound dialogue about the fieldwork findings and the learning process with the students during the debriefing, to let students construct an overall overview of the subject at hand and check possible misconceptions and omissions;
3. **Fieldwork should be structurally integrated** at curriculum level with the link between the goals of the regularly occurring fieldwork and national and school programmes;
4. **Attention should be devoted to affective learning** as well as to cognitive learning and the interaction between the two (Oost, De Vries & Van der Schee, 2011:313).

Additionally, Orion and Hofstein (1994:1100-1101) recommended that preparing students for fieldwork should encompass three aspects:

- Cognitive (e.g. provide concrete materials and concepts students will encounter in the field);
- Geographical (e.g. provide slides, films, and maps of the field setting), and;
- Psychological (e.g. provide information such as schedules and weather forecasts).

Kent, Gilbertson and Hunt (1997) highlighted the importance of the follow-up phase of fieldwork to learners' learning. According to them, "the role of the follow-up phase is to support students in recalling and elaborating on their field experiences so that they develop deeper understanding" (Kent, Gilbertson & Hunt, 1997:322). Additionally, "It is important that follow-up work begin as soon as possible after fieldwork because any delay will weaken students' memories" (Remmen & Frøyland, 2015:25).

These guidelines and conditions were taken into consideration when fieldwork lessons were planned and implemented by the Geography teachers who participated in this study. A detailed description of the fieldwork learning activities that were conducted for the purpose of this research study is provided in Chapter 6 (cf.6.6).

2.8.3 Studies on Teachers' and Learners' Perspectives on fieldwork

It is vitally important to find out how fieldwork is perceived by both Geography teachers and learners in schools. An understanding of how fieldwork is perceived in schools is of the utmost importance in identifying the factors that enable and constrain its implementation in school settings. Studies have been undertaken in different parts of the world in order to ascertain how both teachers and learners perceive fieldwork as a teaching and learning method in Geography. Cook (2008:72) is of the opinion that "an understanding of students' perceptions of fieldwork is important for teachers wishing to build on students' personal experiences of places and environments through fieldwork".

A number of studies have documented learners' views, perceptions and experiences of fieldwork learning activities in Geography. Yang, Wang, Xu, Wang and Deng (2013) explored leaner' perceptions of fieldwork from an international perspective by reviewing leaners' fieldwork reports as well as administering a questionnaire to 337 junior high school learners in China. The study reported positive perceptions of learners about fieldwork learning activities in addition to establishing that learners found fieldwork to be interesting. According to the researchers, "Fieldwork provided the students with a deepened understanding of issues, cognitive and affective benefits, transferable skills and knowledge, social skills, demonstration, and memorable experience" (Yang *et al.*, 2013:156). Simasiku (2012) investigated how fieldwork contributed to the learning of Geography amongst senior secondary school learners in Namibia. The study identified the following overarching benefits of how fieldwork facilitated learning amongst learners, including:

- Empowering learners to develop contextual knowledge and understanding of geographical issues that were being investigation during fieldwork activities;
- Promoting social interaction and group cohesion amongst learners and enhancing their decision-making abilities for problem-solving;
- Eliciting emotional responses and a greater understanding of learners' own and others' attitudes and values towards geographical issues (Simasiku, 2012:82).

In a higher education context, Dunphy and Spellman (2009) administered an attitude survey to a sample of 1,191 undergraduate Geography students across 16 British universities. The purpose of the survey was to assess Geography learners'

perceptions of the 'value' of fieldwork. The results of the study revealed evidence indicating that fieldwork was valued by most students irrespective of their gender. Fuller, Edmondson, France, Higgitt and Ratinen (2006) provided an international perspective on the effectiveness of fieldwork as a mode of learning Geography in universities across three countries: New Zealand, Singapore and the United Kingdom. The study documented common themes across the three cases on the effectiveness of fieldwork as a mode of learning in enabling an understanding of the subject of Geography. The results indicated that fieldwork enabled the learning of Geography by:

> Providing first-hand experience of the real world, [irrespective of] whichever part of the world the students are in; skills development (transferable and technical); and social benefits (Fuller *et al.*, 2006:89).

With regard to school teachers' perspectives and experiences of the application of geographical fieldwork as a teaching method, Yang *et al.* (2014) administered a small-scale survey on the views and attitudes of junior high school teachers in China towards geographical fieldwork. The research results revealed that teachers held positive perceptions of fieldwork. Most importantly, teacher responses indicated that:

> The positive perceptions largely arose from the fact that fieldwork expanded students' interests in geography, improved their social skills and deepened their understanding of issues, enhanced their affective and psychomotor abilities, and deepened their connection to geography (Yang *et al.*, 2014:207).

Additionally, the study identified constraints that affected the effective implementation of fieldwork such as large class sizes, limited time, over-emphasis on classroom learning, teachers' liability for students' safety, and a lack of software and hardware (Yang *et al.*, 2014). Another constraint identified was the fact that fieldwork was not covered in examinations and that this negatively affected teachers' willingness to conduct fieldwork in their lessons (ibid.).

Oost, De Vries and Van der Schee (2011) carried out a study in the Netherlands aimed at generating insights into 'how and whether' school Geography teachers succeeded in using fieldwork as a rich and powerful teaching strategy. The study found that although the majority of Geography teachers did use fieldwork as a teaching strategy,

they generally did not succeed in meeting certain conditions such as implementing fieldwork that is enquiry-driven and student-centred (ibid.).

The study also found that thirty-five percent (35%) percent of the respondents found fieldwork difficult to implement and another eighteen percent (18%) percent responded that they did not feel secure about doing fieldwork (Oost, De Vries & Van der Schee, 2011). The teachers revealed impediments such as a lack of time to develop and to do fieldwork and the lack of time in their class schedule (ibid.).

In addition to the above studies, scholars have also researched and documented the nature of fieldwork activities that were being implemented by Geography teachers.

Chew (2008) investigated the value and importance of fieldwork in Geography education and reported that there was a lack of critical focus on fieldwork as an essential part of Geography education in Singapore. The study found that "most activities conducted in schools would be classified as the 'traditional field excursion' approach, while a number of field activities that could be classified as 'geographical inquiry' and 'discovery fieldwork' types were small in number" (Chew, 2008:316). In Taiwan, Han and Foskett (2007) examined teachers' perspectives on the objectives and constraints in geographical fieldwork. They reported that "teachers had a balanced range of objectives for fieldwork across cognitive, psychomotor and affective domains, while they saw safety, the impact of lessons missed by teachers supervising fieldwork, and large classes as the main constraints to developing fieldwork" (Han & Foskett, 2007:5).

On the other-hand, Swaan and Wijnsteekers (1999) revealed that fieldwork did not have a strong position in the secondary school Geography curriculum in the Netherlands and had never been a feature of teacher training. Bednarz (1999) stated that fieldwork was not a common part of Geography education in the United States of America. Inadequate teacher preparation, cost and lack of curricular support were cited as barriers to fieldwork implementation (Bednarz, 1999). Foskett (1999) mentioned that the role of fieldwork has been marginal in many European countries and in most less developed countries resource constraints have meant fieldwork development has had a very low priority.

This research study advocates for a learner-centred approach to teaching and learning in Geography because such an approach is in conformity with the pedagogical methods and practices associated with both ESD and the learner-centred approach to education being advocated in Namibian schools (cf. 2.4.1 and 2.6.2). It is evident that geographical fieldwork provides opportunities for implementing a learner-centred approach to the teaching of Geography in schools. However, there is a relative deficiency of qualitative research studies which attempt to clarify the application of geographical fieldwork as a learner-centred teaching method in Geography. As discussed above, scholars firmly support a leaner-centred approach over a teacher-centred approach to teaching Geography through fieldwork. The evidence from the literature reviewed demonstrates that in spite of the benefits and the value of fieldwork as a teaching method, much of the fieldwork teaching and learning activities are based on elements of teacher-centred instruction. This state of affair is contrary to the objectives of the practice of ESD, thus contributing to being a hinderance to Geography's role as a vehicle for ESD delivery in schools. This corroborates the views of others such as Dube (2012), Kieu et al. (2016) and Sewilam *et al.* (2015), who identified that teachers' limited practical knowledge to implement learner-centred pedagogies is one of the factors constraining the effective implementation of ESD in classroom settings (cf. 2.5).

In addition to implementing teacher-centred approaches to fieldwork, teachers encounter contextual and structural constraints that deter them from effectively applying fieldwork as a teaching method in schools. This study is an attempt to confirm the view that teaching Geography through the application of geographical fieldwork has immense educational benefits for school learners, and consequently teachers should be provided with the necessary support to enable them to effectively set up and teach Geography using fieldwork. This research study is concerned with examining and shedding light on what transpires when teachers integrate and implement ESD through the application of learner-centred fieldwork. The literature presented in this section aided the research process in terms of providing the researcher with practical guidelines pertaining to setting up and implementing effective fieldwork lessons underpinned by a learner-centred pedagogical approach.

The next section presents a discussion on the importance of fieldwork as a teaching method for integrating and implementing ESD in Geography. The discussion will revolve around offering insights on the learning opportunities embedded in geographical fieldwork in relation to the ESD agenda.

2.9 THE IMPORTANCE OF FIELDWORK AS A TEACHING METHOD FOR INTEGRATING AND IMPLEMENTING EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN GEOGRAPHY

As reflected in previous sections, several studies have explored and documented the contributions of the discipline of Geography to ESD (cf. 2.7). However, little is known about how respective ESD pedagogies enhance the integration and implementation of ESD in Geography classrooms. Additionally, the value and benefits of fieldwork to student learning in Geography is well documented (cf. 2.8). As demonstrated in previous sections, ESD and geographical fieldwork continue to be discussed as discrete entities but not simultaneously as an integrated approach for the purpose of teaching and learning in a school Geography context. Hence, there is a deficiency in understanding as to how geographical fieldwork in school settings can be best utilised as a learner-centred teaching method to implement ESD. For that reason, this section explains how geographical fieldwork as a teaching method contributes to the integration and implementation of ESD learning processes amongst learners.

The role of schools in promoting ESD has been widely documented. Gough (2006:48) is of the view that “ESD involves developing the kind of civic virtues and skills that can empower all citizens and, through them, our social institutions, to play leading roles in the transition to a sustainable future”.

In a review of ESD pedagogies, Tilbury (2011:27) highlighted the importance of fieldwork in delivering ESD by stressing that “fieldwork is an example of experiential learning pedagogy that can influence students’ emotions and help develop the critical thinking skills so essential to understanding the complexity of sustainability”. The beneficial aspect of adopting fieldwork as a teaching method in Geography is that it enables learners to engage in authentic learning experiences necessary to explore sustainability issues in their local environment. Learning outside the Geography classroom promotes authentic learning, because the acquisition of ‘real’ geographical

knowledge takes place in the field as a result of the interaction of physical, mental and emotional experiences (Stoddart, 1986). Learning outside the classroom through geographical fieldwork promotes the implementation of place-based education (PBE). According to Israel (2012:79), PBE is learning entrenched in local places and "uses field-based experiences to enable students to situate themselves as members of social and ecological communities and to cultivate a sense of ethical responsibility for the well-being of those communities". The use of local places as a context for learning provide opportunities for meaningful learning by linking the school curriculum (learning content) with real-world learning opportunities, thus enhancing the relevance of education. It is acknowledged that in order for ESD to be meaningful, curriculum content should be "derived to a large extent from the local context, addressing issues of relevance and urgency" (UNESCO, 2006:21). By virtue of its adoption as a teaching method, fieldwork presents numerous opportunities for integrating classroom learning with real-world sustainability challenges in a local context.

According to Lotz-Sisitka and Lupele (2017:6):

> ESD learning processes involve engagement with matters of concern that arise at the social-ecological-economic-political interface. These matters of concern often involve engagement with risk, uncertainty and wicked or difficult-to-solve problems. They also involve envisioning new futures and engagement in actions and practices that model and contribute to the emergence of a more sustainable, inclusive and socially just society.

Consistent with the above quote, Casinader and Kidman (2018) encapsulate a distinctive feature of geographical fieldwork in engaging with sustainability by noting that:

> geographical fieldwork, with its focus on 'the acquisition of deep and intimate knowledge of the land, or site, under investigation', and in its wider conceptualisation of fieldwork as a dynamic, all-encompassing form of inquiry learning, enables a better understanding of the transformation or development of a landscape as modified by people; that is, the very interaction that is the core of the concept of sustainability (Casinader & Kidman, 2018:5).

In the context of the ESD learning objectives (cf. 2.4.3), fieldwork can offer experiential and active learning opportunities for learners to engage with and explore the SDGs (cf. Tables 2.2 and 2.3). The role of ESD within the SDGs agenda is that of enabling learners to develop "the cross-cutting sustainability competencies needed to deal with a wide range of sustainability challenges" (Rieckmann, 2018:59). Through

geographical fieldwork, the contributions of Geography towards ESD can be operationalised by enabling learners to investigate relevant SDGs challenges in their local communities through active-inquiry learning opportunities (cf. 2.4.1 and 2.8.2). Casinader and Kidman (2018) highlight the value of geographical fieldwork to learners in their exploration of sustainability issues. They explain that:

> Geography in the field is concerned with the entirety of all that exists in a place. Its data gathering, although planned, is capable of being modified in order to respond to what is found to exist in a place and is not limited by a bounded reliance on what is perceived or expected to exist. It is able to combine the objectivity of a scientific data investigation with a reflexive engagement by the student in the process of studying what is sustain able and what is not. In consequence, sustainability education within a geographical frame investigates the issue as one that is not separate from the lives of human beings in a place; instead, it reinforces the mutual interdependence on which the two concepts coexist, both as discipline and priority (Casinader & Kidman, 2018:11).

As the quotation extensively indicates, providing learning opportunities through fieldwork can enable learners to investigate local SDGs such as safe drinking water, sanitation, maternal health, problems associated with urbanisation, social justice and environmental issues to mention but a few. Implementing learning for the SDGs through ESD necessitates the adoption of learner-centred, action-oriented and transformative pedagogical approaches that enable learners to be empowered thus enabling them to develop into sustainability-conscious citizens (Rieckmann, 2017:54). The role of pedagogy within an ESD context is to enable learners "to explore questions, issues and problems of sustainability, especially in contexts relevant to them and their communities; this involves student-centred and interactive enquiry-based approaches to teaching and learning" (Fien, 2001:24). This pedagogical approach runs parallel to that of geographical fieldwork as illustrated by the views of Casinader and Kidman (2018:11), who posit that:

> As a 'real-world inquiry that is framed around goals of transformation, based on the data relating to a place, geographical fieldwork becomes the natural conduit for sustainability, simultaneously highlighting the immutable dependence of a long-term environmental solution in the modification and/or cooperation of people living in the same place.

The above section has explored the importance of fieldwork as a teaching method for integrating and implementing ESD in Geography. The literature shows that fieldwork is an example of an experiential leaner-centred pedagogy that provides learners with

active-inquiry learning opportunities relevant in the exploration and pursuit of solutions to the challenges of sustainability and the SDGs. The literature further indicates that fieldwork can be an effective pedagogic device for integrating ESD in order to enable learners to actively explore relevant SDGs in their local community contexts. The literature review has also illustrated that fieldwork as a teaching method offers an ideal platform for exploring sustainability issues in context; thus, fieldwork informs and enriches our understanding of Geography's contributions to ESD and to the teaching of the complexity of sustainability. One of the objectives of this study is to learn from the research participants how the integration and implementation of ESD through the application of geographical fieldwork as a teaching and learning method "can help to enhance quality education (QE) in a meaningful and identifiable way" (Kadji-Beltran, Christodoulou, Zachariou, Lindemann-Matthies, Barker, & Kadis, 2016:1).

The following section explores geographical fieldwork in the Namibia senior secondary school curriculum.

2.10 GEOGRAPHICAL FIELDWORK IN THE NAMIBIAN SENIOR SECONDARY SCHOOL GEOGRAPHY CURRICULUM

The aims of basic education are to empower learners to be productive future Namibian and global citizens. The Ministry of Education (Namibia. MoE, 2009b) points out that the senior secondary school Geography curriculum is a two-year long course and recognises the uniqueness of the learner and adheres to the philosophy of learner-centred education. At the senior secondary school level, the Geography learning area is envisaged to contribute directly towards the development of eight key skills, namely:

- Communication skills;
- Numeracy skills;
- Information skills;
- Problem-solving skills;
- Self-management and competitive skills;
- Social and co-operative skills;
- Work and study skills;
- Critical and creative thinking skills (Namibia. MoE, 2009b:1).

Moreover, senior secondary school teachers are also mandated to incorporate the aims and goals of basic education for a knowledge-based society (cf. 2.6.2). The senior secondary school Geography learning content is divided into four broad themes, namely:

1. The physical world
2. Economic development and the use of resources
3. Population and settlement studies
4. Research techniques and map reading skills (Namibia. MoE, 2009b:2).

It is important that the 'Research techniques and Map reading skills' theme is not taught in isolation but is integrated into the teaching of the other three themes, i.e. the physical world; economic development and the use of resources, as well as population and settlement studies (ibid.).

The implementation of geographical fieldwork is encouraged in the 'Research techniques' theme which requires learners to undertake research projects (geographical inquiries) in order to be able to:

- Identify a problem/research topic and state its objectives;
- Apply methods of data collection such as interviews, questionnaires, sampling, observations, simple surveys (counts and measurements) and document studies;
- Demonstrate the ability to use and access information from Information Technology (where available) for data analysis and interpretation;
- Describe the limitation of the methods used;
- Demonstrate the ability to analyse and present data collected in appropriate form using, for instance, maps, graphs, tables;
- Draw effective conclusions and make evaluations, suggesting solutions where appropriate (Namibia. MoE, 2009b:13).

Geography teachers are encouraged to select any topic from the syllabus with which to integrate the teaching of research skills. The research skills learning content is also assessed in the Geography examination. All Geography learners are required to take

Papers 1, 2 and 3. Paper 3 is based on examining research skills and techniques of geographical investigations where learners are expected to:

- Formulate a research topic;
- Use suitable techniques for observing, collecting, classifying, presenting, analysing and interpreting data;
- Select, use and present geographical information in an appropriate form and manner;
- Obtain information from a variety of sources such as maps and plans of various scales, audio-visual materials, internet and computer software, documentary materials and statistics;
- Depict the information in appropriate forms using maps, diagrams, etc; (Namibia. MoE, 2009b:15).

It is also recommended that learners engage with learner-centred geographical inquiries that adhere to the philosophy of learner-centred education underpinned by a constructivist learning theory (cf. 4.2.1 and 4.3). As illustrated above, the Namibia senior secondary school Geography curriculum provides opportunities for the implementation of fieldwork teaching and learning activities. The literature presented in this section, together with the Namibian senior secondary school Geography curriculum documents, as well as the responses from semi-structured interviews provide essential guidelines for the integration of ESD into the lessons planned and implemented during the research process (cf. Chapter 6).

2.11 CONCLUSION

This chapter has provided a contextual background for understanding the evolution, development and implementation of ESD in the formal school context. An outline of the ESD dimensions, namely learning content, pedagogy as well as learning objectives and outcomes, was provided. The chapter demonstrated that, although there has been significant progress towards the implementation of ESD internationally, attempts to successfully put it into practice in classroom settings have been constrained by pedagogical challenges faced by school teachers internationally. The

review of literature indicated that teachers face challenges in implementing learner-centred pedagogical approaches that support the implementation of ESD.

Geographical education and its contribution to ESD implementation in schools was discussed. It was evident from the reviewed literature that Geography contributes to ESD in a number of ways. For example, geographical content knowledge, skills and pedagogy enable learners to understand and to be educated about SD issues and challenges.

With regard to geographical fieldwork, the literature reviewed in this chapter showed that it is an ideal pedagogical method to integrate as well as to implement ESD in schools. Yet it also emerged that the application of geographical fieldwork as a teaching method is constrained as a result of, among other factors, practical implementation challenges and contextual factors facing teachers.

This chapter has also demonstrated that ESD was introduced in Namibia as a response to global trends and influences on Namibia's national education system. For that reason, it is being implemented in a cross-curricular learner-centred manner in the formal school curriculum. The Namibian formal Geography school curriculum was discussed with regard to how it makes provision for the integration and implementation of ESD through geographical fieldwork in school classrooms. The next chapter discusses quality education in more detail.

3 QUALITY EDUCATION

3.1 INTRODUCTION

Chapter 2 presented and discussed the literature on the two concepts which frame this study, i.e. education for sustainable development (ESD) and geographical fieldwork. This chapter explored and discussed the third important concept through which this study was conceptualised, namely quality education (QE). The chapter begins by providing some perspectives on the meaning and definition of quality education. The chapter further engages with the three intersecting traditions that have contributed to the way that the concept of quality education is conceptualised by international agencies and researchers, and interpreted in lower- and middle-income countries (Barrett, Chawla-Duggan, Lowe, Nikel & Ukpo, 2006). That will be followed by an examination of a framework for understanding educational quality. Following that, a multidimensional model of quality in education will be explored. A discussion on the connection between quality education and ESD will then be presented and explained. The chapter concludes with a discussion of the links between ESD and quality education, which is illustrated by an in-depth engagement with the learning performance framework (LPF), a framework for understanding how ESD and quality education are linked.

3.2 DEFINING AND UNDERSTANDING QUALITY EDUCATION

The discussion below examines some relevant literature on the definition of quality education in relation to this study, which explores the concept of quality education from the perspectives of teaching and learning (pedagogy) in a sub-Saharan African context. Therefore, much of the discussion in the following sections will focus on that.

3.2.1 Defining quality education

The concept of quality education is complex and not easy to define or describe. However, two principles characterise most attempts to define quality in education:

> The first identifies learners' cognitive development as the major explicit objective of all education systems. Accordingly, the success with which systems achieve this is one indicator

> of their quality. The second emphasises education's role in promoting values and attitudes of responsible citizenship and nurturing creative and emotional development. The achievement of these objectives is more difficult to assess and compare across countries (UNESCO, 2004b:17).

Sifuna and Sawamura (2010:17) maintain that "In studies of quality and equality issues in education in third-world countries, it is pointed out that there is as yet no consensus on the definition of the term quality". For many people, causal and expert observers, political authorities, parents and communities, teachers and education administrators, 'quality education' is determined by national examinations (Sifuna & Sawamura, 2010:17-18). They further explain that "education systems set objectives, and those objectives are then operationalised in the curriculum and teachers' guides" (2010:18). Samoff (2007) explains that:

> The mastery of the curriculum is measured by national examinations. Hence, the best indicator of high-quality education is a high score on the national examinations. When students perform well on national examinations, then it is reasonable to conclude that they have had a high-quality education (Samoff, 2007:489).

On the other hand, Tikly (2010:1) defines a good quality education as:

> One that enables all learners to realise the capabilities they require to become economically productive, to develop sustainable livelihoods, to contribute to peaceful and democratic societies, and to enhance wellbeing.

The author further indicates that the learning outcomes that are required vary according to context, but at the end of the basic education cycle, must include threshold levels of *literacy* and *numeracy* and *life skills*, including awareness and prevention of disease (Tikly, 2010:1). The author also specifies that a good quality education needs to be:

> **Inclusive:** All learners have the opportunity to achieve specified learning outcomes;
> **Relevant:** Learning outcomes are meaningful for all learners, valued by their communities, and consistent with national development priorities in a changing global context;
> **Democratic:** Learning outcomes are determined through public debate and ensured through processes of accountability (Tikly, 2010:2).

Another dimension of the concept of quality education is that "quality education emphasises holistic development, equips students with the knowledge and skills for the future, inculcates students with the right values and imbues students with a positive

learning attitude" (Ng, 2015:307). Furthermore, quality education is delivered by good teachers, enabled by good teaching and learning processes, and facilitated by an environment conducive to learning (ibid.).

The term 'quality education' can clearly have different meanings and interpretations. Moreover, UNESCO (2005a) maintains that quality education is a dynamic concept that changes in the social, economic and environmental contexts of place. The following section presents and discusses a framework for understanding quality education in a formal school context. Such a discussion is relevant in order to illustrate how different elements of the framework contribute to our understanding of quality education.

3.2.2 A framework for understanding education quality

As showed in section 3.2.1, the concept of quality education is multifaceted. UNESCO (2004b:6) clarified that one way of studying quality despite the different approaches is to look at the objectives of cognitive development and nurturing of particular sets of values, attitudes and skills that are important aims of all education systems. UNESCO (2004b) further points out that "a review of the main elements of education systems and how they interact provides a useful map for efforts to understand, monitor and improve quality" (2004b:6).

UNESCO (2004b:35) suggested that defining the quality of education and developing approaches to monitoring and improving it needs to take into account the following points of departure:

- A broad agreement about the aims and objectives of education;
- A framework for the analysis of quality that enables its various dimensions to be specified;
- An approach to measurement that enables the important variables to be identified and assessed;
- A framework for improvement that comprehensively covers the interrelated components of the education system and allows opportunities for change and reform to be identified.

Figure 3.1 below outlines UNESCO's (2004b) proposed framework for understanding, monitoring and improving the quality of education, which identifies the key elements that influence teaching and learning.

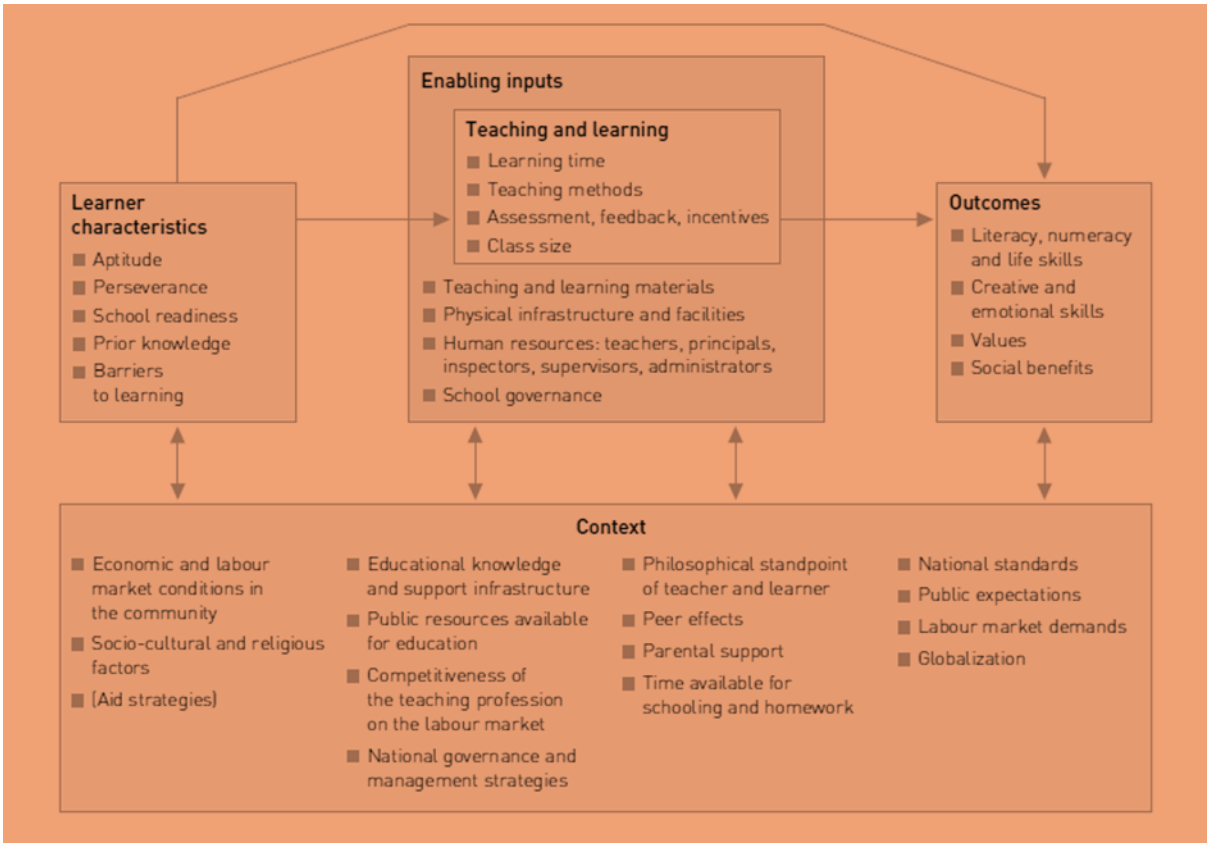

Figure 3.1: A framework for understanding education quality *(UNESCO, 2004b:36)*

As illustrated in Figure 3.1, understanding quality education involves a holistic view that considers the five key elements that affect it (UNESCO, 2004b). The **five major factors** that influence how quality in education is determined are explained below:

- **Learner characteristics:** It is noted that the way people learn is strongly influenced by their capacities and experience, and any assessment of quality of education that ignores initial differences among learners is likely to be misleading;
- **Context:** Education normally reflects the society in which it is offered in terms of values and attitudes, as well as material provision. The national education policies provide an important context, especially goals and standards, curricula and teachers' policies all have an impact on quality. There are international aid strategies that are also influential in most developing countries;
- Enabling **inputs**: availability and management of resources affect the success of teaching and learning. Inputs (material and human resource) are critical in enhancing the teaching and learning process and, in turn, affect the range and type of outputs;
- **Teaching and learning process:** The teaching and learning process is closely related to the support system of inputs and other contextual factors. This aspect involves what happens in the classroom and the school;

- **Outcomes:** The outcomes of education should be assessed in the context of its agreed objectives. They are generally expressed in terms of academic achievement, especially examination performance, though ways of assessing creative and emotional development as well as values, attitudes and behaviour have to be devised. Other proxies for learner achievement and for broader social or economic gains can be used, which affect labour market success (UNESCO, 2004b:36-37; Sifuna & Sawamura, 2010:23-24).

As illustrated above, understanding and improving the quality of education is influenced by a number of important elements as shown in Figure 3.1. The focus of this study is on investigating how quality education can be improved from the perspective of teaching and learning. Therefore, the discussions on quality education will mainly be focused on how teaching and learning processes in classroom contexts impact on the quality of education, with a specific focus on learners' learning outcomes. It is argued that what happens in the classroom between teachers and learners through the processes of teaching and learning has the greatest impact on learners' learning outcomes and thus on the quality of their education (cf. 1.4). Additionally, this research study is framed within a broader context of Goal 4 of the SDGs, which emphasises deeper engagements with issues of 'relevant learning' and 'learning outcomes' as key features determining quality education and progress towards reaching the targets of the SDGs (cf. Barrett & Bainton, 2016; UNESCO, 2016). Hence, this study was conceptualised with view to exploring how quality education can be determined at the teaching and learning interface in a classroom context.

The following section introduces and discusses three intersecting traditions of quality education. These three intersecting traditions influence the way that quality education is conceptualised.

3.3 THREE INTERSECTING TRADITIONS OF QUALITY EDUCATION

Different education models and traditions involve different ideas of what constitutes quality in teaching and learning (UNESCO, 2004b). Three intersecting traditions of quality education are predominant in the international educational literature (Lotz-Sisitka, 2008; Laurie *et al.*, 2016; Lotz-Sisitka & Lupele, 2017). The three traditions of quality education are (1) the economic tradition; (2) the humanistic tradition; and (3)

the 'learning as connection' tradition. These intersecting traditions are presented in Figure 3.2 and are further explained below.

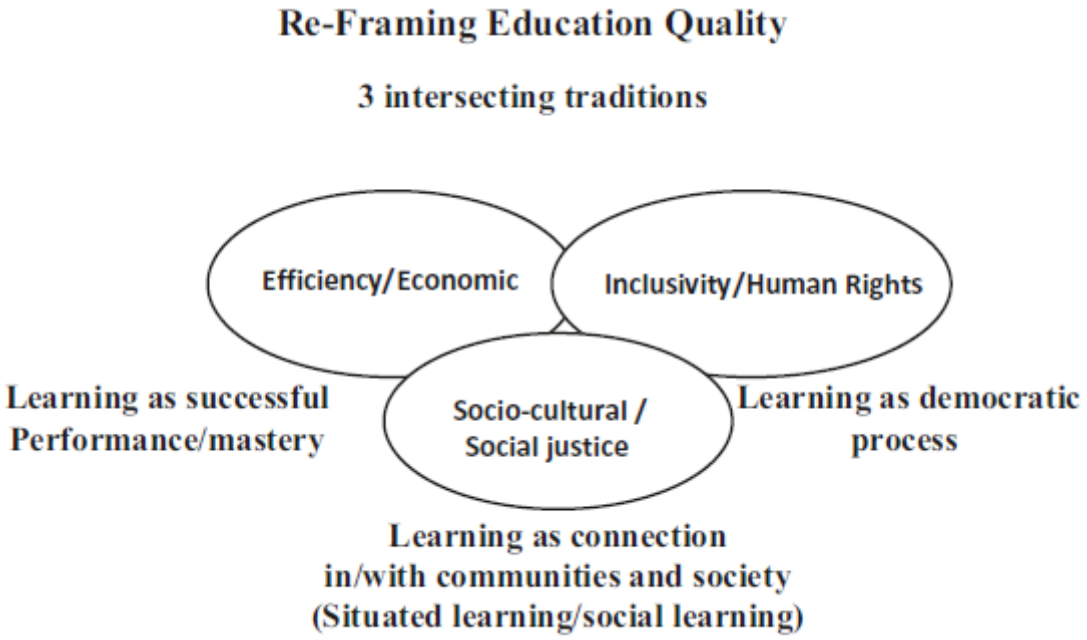

Figure 3.2: Three intersecting traditions of quality education (Lotz-Sisitka & Lupele, 2017:12)

3.3.1 The economic/efficiency/mastery tradition of quality

The human capital approaches to quality in education are influenced by neoliberal economic theories (Tikly, 2010). In this tradition a good quality education is associated with cognitive achievement and improvements in scores in standardised tests (2010:2). According to Barrett *et al.* (2006:2), the 'economic' view of education uses quantitative measurable outputs as a measure of quality, for example, enrolment ratios and retention rates, rates of return on investment in education in terms of earning, and cognitive achievements as measured in national or international tests. This approach to quality education "seeks out mastery, efficiency and learner achievement and performance against set standards and expectations as measures of quality" (Lotz-Sisitka & Lupele, 2017:11). Additionally, the economic model of education deals with inputs and outputs (Laurie *et al.*, 2016); this "'economist' view tends to dominate World Bank thinking on education" (Barrett *et al.*, 2006:3). It is based on the notions of human capital theory which theorises that education is important to economic development

and reduction of poverty (Kumar & Sarangapani, 2004). The model regards the Gross Domestic Product (GDP) as the most important indicator of development (Tikly & Barrett, 2011).

In terms of teaching and learning, the economic tradition on quality education tends to adopt a behaviourist approach. This approach to teaching and learning is based on the manipulation of behaviour through specific stimuli (UNESCO, 2004b:33). Sifuna and Sawamura (2010:16) explain that:

> The behaviourist approach to education is heavily influenced by behaviourist theories of Skinner and Pavlov and advanced by leading curricula specialists like Tyler (1949) and Bloom (1964), who set out educational objectives against which finely tuned instruments could be developed.

Quality in the behaviourist sense is judged through standardised, externally defined and controlled curricula, based on prescribed objectives and defined independently of the learner, while tests and examinations are considered central features of learning and the main means of planning and delivering rewards and punishments (Sifuna & Sawamura, 2010:16). Assessment is seen as an objective measurement of learned behaviour against pre-set assessment criteria (2010:16). This approach to educational quality, particularly in developing countries, has been criticised by O'Sullivan (2006:251) who argues that:

> In developing countries, a focus on examination results can be detrimental to the quality of teaching and learning as teachers tend to rely on rote teaching and learning to prepare children for the tests. Children are only developing one skill, that of memorisation.

This tradition of determining quality in education dominates educational theory and practice by informing teachers' methods of teaching in many parts of sub-Saharan Africa (cf. 2.5) (cf. Gadotti, 2010; Dube, 2012; Sewilam *et al.*, 2015; Kieu, Singer & Gannon, 2016).

In addition to the above points, the main tenets of behaviourist educational theory are:

- Learners are not intrinsically motivated or able to construct meaning for themselves;
- Human behaviour can be predicted and controlled through reward and punishment;
- Cognition is based on shaping of behaviour;
- Deductive and didactic pedagogies, such as graded tasks, rote learning and memorization, are helpful (UNESCO, 2004b:33).

The economic tradition of quality in education emphasises that learners should attain foundation skills, for instance literacy, numeracy, reasoning and social skills, and to have additional opportunities to learn advanced skills throughout life (Ng, 2015).

3.3.2 The humanistic/inclusivity/participatory tradition of quality

The progressive/humanist tradition tends to place more emphasis on educational processes (Barrett *et al.*, 2006:2). The human rights approach to quality education is attentive to the issues of rights to education, rights in education and rights through education (Tikly & Barrett, 2011:3). This approach to quality education has been impacted heavily by "human rights discourses that have been advocated by UN agencies i.e. UNICEF & UNESCO, International NGOs and civil society organisations at the international, national and local level" (2011:3). UNESCO and UNICEF are advocates of this notion of quality education (Ng, 2015); and "both UNESCO and UNICEF embed learner-centred approaches into their understandings of quality education" (Schweisfurth, 2015:261).

To put the above approach into perspective, the UNESCO *Delors Report* presented its description of quality education underpinned by four pillars:

- **Learning to know:** acknowledges that learners build their own knowledge daily, combining indigenous and 'external' elements;
- **Learning to do:** focuses on the practical application of what is learned;
- **Learning to live together:** addresses the critical skills for a life free from discrimination, where all have equal opportunity to develop themselves, their families and their communities;
- **Learning to be:** emphasises the skills needed for individuals to develop their full potential (Delors, 1996:20-21).

Additionally, UNICEF's (2000:4) notion of quality education entails:

- Learners who are healthy and well nourished;
- Environments that are healthy, safe, protective and gender-sensitive, and provide adequate resources and facilities;
- Content that is reflected in relevant curricula and materials for the acquisition of basic skills;
- Processes through which trained teachers use child-centred teaching approaches in well-managed classrooms and schools;
- Outcomes that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society.

The humanistic tradition seeks inclusion in the education system as its measure of quality – for example, if girls are included in school system, the quality of the system is seen to be higher or better, or if learners' views are included in pedagogical processes through learner-centred approaches, then the quality of the education is seen to be higher or better (Lotz-Sisitka & Lupele, 2017:11). Goals of education include wider social goals (e.g. human rights, social justice and democracy as well as environmental sustainability) and personal goals (Laurie *et al.*, 2016:228). This tradition aims to develop the whole personality as well as creativity and problem-solving abilities (ibid.). This approach to quality education "mainly focuses on the individual and how education impacts the learner" (Ng, 2015:308).

The humanistic approach to quality in education is often associated with terminology such as "learner-centred, participative and democratic" (Laurie *et al.*, 2016:228). Sifuna and Sawamura (2010:16) further explained that:

> Quality in the humanistic approach to education rejects standardized, prescribed and externally defined or controlled curricula, as they are seen as undermining the chance of learners to construct their own meaning and for educational programmes to remain responsive to individual learners' circumstances and needs.

The teacher's role in the humanistic approach is one of being a facilitator rather than an instructor (ibid). The role of assessment in the humanistic tradition is to provide learners with information and feedback about the quality of their individual learning (Sifuna & Sawamura, 2010:16). Tikly and Barrett (2011:4) further noted that "the human rights approach of access to education has been critiqued in the past as vulnerable to being reduced to legal rights only, which are formulated and implemented in a high level international and state-led manner, whilst moral rights are overlooked".

3.3.3 The 'learning as connection' tradition of quality education

According to Laurie *et al.* (2016), the learning as connection tradition arose from sub-Saharan Africa over the past decade. This tradition stresses the importance of connecting learners' existing knowledge of local contexts to the process of learning abstract concepts (Lotz-Sisitka, 2013). Laurie *et al.* (2016:229) add that:

> A group of researchers in southern Africa found that issues that threatened sustainability are essential to quality education in the African context. Incorporating local issues is part of the 'learning as connection' model of quality education in which everyday knowledge is brought into

> relationship with abstract and academic concepts so that both can grow together. The learning as connection model is grounded in a constructivist perspective of education.

Taking the above discussion further, Lotz-Sisitka and Lupele (2017:12) point out that the learning as connection model is "concerned with the meaning that occurs at the interface between context and concept". Additionally, "this framework promotes curricula and pedagogies that recognise and value histories, lifestyles and pedagogic texts; it also supports the concept of localised curricula, but does not narrow all learning to the local only" (Kalumba, 2012:5). Sifuna and Sawamura (2010:17) highlighted that this approach to education assumes that "all learners are said to have rich sources of prior knowledge, accumulated through a variety of experiences, which educators should draw out and nourish". Although the 'learning as connection' tradition emphasises the notion of localised curricula, Lotz-Sisitka and Lupele (2017:14) advise that:

> In localisation of curriculum, caution must be taken to avoid a conservative over-emphasis on local context, which may lead to graduates failing to engage with the challenges of global market or the nature of global issues and the structural features of globalisation.

In view of the above limitation that may arise as a result of localising the curricula, Ontong and Le Grange (2014) suggest the implementation of place-based education (PBE) by educators as an alternative mitigating practice to the identified challenge. The authors show how environmental education learners could benefit from the role of PBE in promoting curriculum relevance by providing learners with learning opportunities in the local environment and through that, enabling the integration of local environmental knowledge with the learning content of the school curricula. The authors explain that:

> Using place as a starting point in environmental education programmes will enable students to understand the localness of environmental problems, even those that transcend national boundaries and that solutions to environmental problems often require local action. Moreover, in rural areas where people live close to the land, place-based environmental education might help students to better understand how their livelihoods depend on the land and could also serve as a basis for integrating indigenous cultural practices and philosophies such as ubuntu (humanness) into environmental education processes. Through connecting with places, students in urban areas could develop greater awareness of how the local and global are intertwined and how global-local connections are evident in environmental problems (Ontong & Le Grange, 2014:29).

From the above illustration, it is evident that PBE can provide a uniquely valuable perspective on how school learning can be connected "to socio-cultural, social-ecological, contextual and historical dynamics of learners' life-worlds and experiences, and communities' valued beings and doings" (Lotz-Sisitka, 2013:32). That is because:

> Such learning cannot be textbook-based and occurs socially as learners engage with one another, communities and the natural environment. Through such engagement, new meanings are constructed in/about the places that leaners inhabit and that inhabit them. Moreover, PBE fosters an understanding of the oneness of people and places, a oneness between social and the natural (ecological) so that places are not studied as objects from a distant human gaze but that human knowledge (including learners' learning) are inextricably bound up with/in places (Le Grange & Ontong, 2018:20).

As a result of its special emphasis "on 'localness', PBE is inherently grounded in indigenous knowledge" (ibid:20.). Similarly, the learning as connection notion of quality education emphasises the importance of situating learning in indigenous knowledge systems through the introduction of a localised curriculum in schools (Lotz-Sisitka & Lupele, 2017).

3.3.4 Implications of the three intersecting traditions of quality education for this research study

As highlighted in the above sections, all three overlapping traditions approach quality education differently, though each has its valid justifications. This research study acknowledges the significant contribution of all three intersecting traditions to quality education. There is an evolving recognition that all three traditions to quality education have a certain credibility, and that it is their intersectionality that is critically important to reframing and improving the quality of education (Nikel & Lowe, 2010; Tikly & Barrett, 2011; Kalumba, 2012; Lotz-Sisitka, 2013; Lotz-Sisitka & Lupele, 2017). This view is corroborated by Lotz-Sisitka (2013), who maintains that "These three conceptions of educational quality, when considered together, significantly deepen the manner in which educational quality is approached conceptually but also practically and pedagogically" (Lotz-Sisitka, 2013:32).

Central to this research study is how the intersecting traditions of quality education impact on the processes of teaching and learning in classroom settings. All three discourses on quality education are relevant and useful to this study, which seeks to

establish how quality education (the promotion of relevant learning outcomes in learners) at the classroom level can be improved through the processes of teaching and learning. The economic tradition to educational quality is relevant for both teaching and learning processes as well as relevant in teacher training settings because:

> Firstly, it serves to enable student teachers and their pupils to acquire the competencies that are valued in the labour market. Secondly, the field aims to equip student teachers with the know-how of effectively transferring these competencies to their pupils in the classrooms (pedagogical knowledge) (Nsubuga, 2014:383).

According to Lotz-Sisitka (2013:29), this orientation to educational quality is viewed to have been introduced into African education systems through colonial intrusions that were characterised by "'mastery-of-the-subject' strategies in respect of pedagogy and teaching". The author further acknowledges that this approach to educational quality is appreciated for being regarded as efficient in terms of enabling learners to master the most significant content of education. This kind of mastery is also valued by those with economic interests in education, as it is seen to be 'efficient' to master the most important content of education as swiftly as possible (2013:29-30). According to Kalumba (2012), and in the context of this research study, this orientation is relevant in research studies that investigate the impact of teaching methods on learning (which is the case in this study). In such a discourse "this would mean that the emphasis would be on monitoring the effectiveness of the teaching method; linked to results-based criteria" (Kalumba, 2012:4).

On the other hand, a humanistic approach to educational quality regards learning as a key component of quality education and it emphasises that "The acquisition of knowledge and skills requires an active participation of the individual learner" (Sifuna & Sawamura, 2010:16). This approach to quality education enables the promotion and provision of inclusive learning conditions and environments that are conducive to learning to take place. This approach to educational quality impacts on educational practice by necessitating teaching and learning processes that are inclusive, relevant and democratic (cf. Tikly & Barrett, 2010) (cf. 3.2.1) This approach to quality education is essential in planning teaching and learning activities that ensure the active participation of learners in addition to incorporating learning content that takes into consideration learners' needs. In terms of its applicability to research studies that are attentive to teaching methods, the humanistic approach to quality "would require an

analysis of the learner-centred nature of the teaching methods, and principles of inclusivity associated with the methods" (Kalumba, 2012:5).

The 'learning as connection' approach to educational quality provided some valuable guidelines to this research study because of its emphasis on the importance of situating teaching and learning within learners' socio-cultural contexts as a condition to enhance the relevance of their education and to improve the quality of education. Such guidelines were useful in enabling the teachers who participated in this study to incorporate teaching and learning activities that drew on learners' socio-cultural experiences. It is acknowledged that integrating aspects that draw on the socio-cultural experiences of learners through teaching and learning processes improves the quality of education because it:

> further deepens notions of inclusivity or inclusivity concepts of quality so as to be inclusive of culture, local context and issues, and practices that have meaning in local societies, such as environment and sustainability practices, health-education practices, life skills, and citizenship practices (Lotz-Sisitka, 2013:30).

The research study took note of the above aspects on how the quality of education could be improved. Thus, socio-cultural aspects of learning guided both the planning and the implementation of teaching and learning processes during the research study (cf. 4.3 and 6.5).

In summary, this research study draws on all three traditions of quality education in order to gain insight into how the overall quality of education can be improved from the perspectives of all three intersecting traditions. That is because they inform and enrich one another in contributing to different aspects of educational quality in school contexts through the processes of teaching and learning. They all have significant roles to play in education theory and practice, and can be utilised as guidelines to inform both teaching and learning as well as contribute towards the professional development of teachers. All three approaches are applicable to and relevant in the analysis of quality education.

The following section introduces and discusses the dimensions model of quality in education; this is a useful framework for investigating and interpreting issues of quality education. One strength of the dimensions model is that its seven conceptual dimensions are derived from the three intersecting traditions of quality education.

Furthermore, an explanation of how the dimensions model of quality in education is beneficial to this study will be provided.

3.4 THE DIMENSIONAL MODEL: THE FABRIC OF THE QUALITY OF EDUCATION

Barrett *et al.* (2006) undertook an extensive review of the international literature on the concept of quality education in low-income countries. Their literature review focused on formal primary education, "which to a certain degree may be extrapolated to a formal secondary education context" (my emphasis added). The literature review identified five dimensions of quality in education, namely:

- Effectiveness
- Efficiency
- Equality
- Relevance
- Sustainability

The authors noted that the five dimensions of quality in education "are often in tension with each other so that actions to improve one may have negative effects on another" (Barrett *et al.*, 2006:13).

Nikel and Lowe (2010) extended and expanded on the work of Barrett *et al.* (2006) by undertaking a conceptual review of the literature on the concept of quality education in low-income countries. The literature review enabled them to develop a multi-dimensional framework of quality in education, which they called 'the fabric' of quality in education (see Figure 3.3). They also proposed and presented their definition of quality as "the degree of excellence of something and that this is in turn judged or measured against other similar things" (Nikel & Lowe, 2010:590).

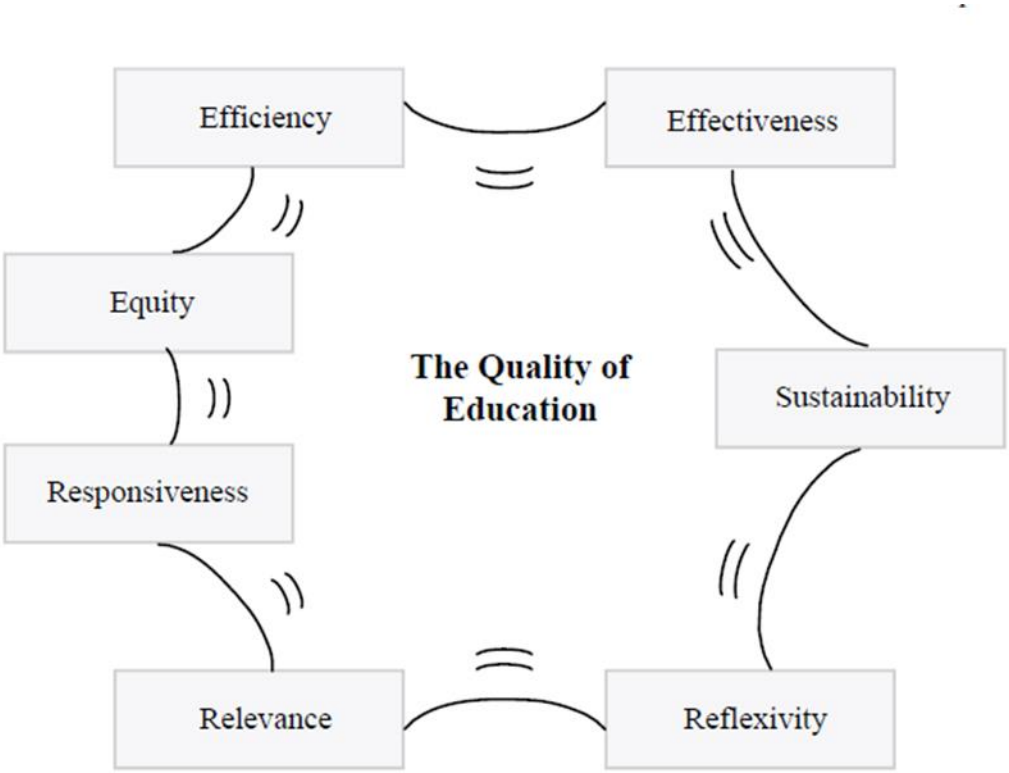

Figure 3.3: The 'fabric' of quality in education (Nikel & Lowe, 2010:595)

According to Nikel and Lowe (2010:595), the 'fabric' model of quality in education consists of seven dimensions of quality that are held in tension "so that adjustments to one dimension have implications for the others in a system of dynamic tension". The seven dimensions of the 'fabric' model of quality are: effectiveness, efficiency, equity, responsiveness, relevance, reflexivity, and sustainability (Nikel & Lowe, 2010:595). The conceptualisation of the 'fabric' model of quality in education is firmly grounded within a broader notion of educational quality. It draws its conceptual dimensions from all three intersecting traditions of quality education presented in section 3.3 (Kalumba, 2012; Laurie *et al.*, 2016). The seven conceptual dimensions of the 'fabric' model are unpacked below.

3.4.1 Effectiveness

Effectiveness, according to Nikel and Lowe (2010), is the extent to which stated (educational) aims are met. According to the authors, educational aims "might be aims indicating an impact (desirable change) on society or the individual at any level of an education system: (2010595). For Barrett *et al.* (2006) effectiveness refers to the

degree to which the objectives of an education system are being achieved. Additionally, a broader consideration of effectiveness will include consideration of personal fulfilment at the level of the individual and issues such as social cohesion, participation and human rights with respect to nation states (Barrett et al., 2006:13).

3.4.2 Equity

In Nikel and Lowe's (2010:597) words, equity as a dimension of quality education "recognises the potential for education to redress social injustices and believe that a high-quality education explicitly attempts to do so" (2010:597). They further argued that:

> An education system (or institution) would be considered equitable to the extent that it mobilises the potential of education to address economic, political and social inequalities, to expand opportunities available to disadvantaged individuals (Nikel & Lowe, 2010:596).

Equity as a dimension of quality education refers to issues of access to education for all people regardless of gender, ethnicity, disability, sexual orientation, etc. (Laurie *et al.*, 2016:229).

3.4.3 Efficiency

Efficiency refers to economic considerations, such as the ratio of outputs to inputs in order to maximise the use of resources (Nikel & Lowe, 2010; Laurie *et al.*, 2016). The inputs may be measured in monetary or non-monetary terms (Barrett *et al.*, 2006:13). Efficiency in education quality measures the extent to which we make best use of inputs to achieve our educational goals (2006:13).

3.4.4 Relevance

According to Nikel and Lowe (2010:597), the relevance of an education system or education experience is the extent to which it addresses user needs. However, the authors acknowledge the fact that "the identification of needs is a complex and often contradictory process" (2010:597). They further noted that they view education systems across the world as promoting the development of "generic" or "transferable skills" as the most relevant curricular content (ibid.). Relevance therefore refers to the goals (contents and competencies) and the means of achieving them to meet the needs of the nation, the community and the learner's life context (Nikel & Lowe, 2010:605).

3.4.5 Responsiveness

Nikel and Lowe (2010) wrote that "responsiveness focuses on individual diversity and difference in learning environments, learning abilities and styles, but also on responding to environmental changes that might affect individual learning ability and willingness to engage" (2010:597). In other words, it is "the capacity of the system to respond to individual differences" (2010:598). It also refers to meeting the needs of the individual learners in classroom interactions by taking into consideration the uniqueness of the learner's abilities (Laurie *et al.*, 2016:229).

3.4.6 Reflexivity

According to Nikel and Lowe (2010:605), the central concern of reflexivity as a dimension of quality education is education's contribution to learners' personal orientation in a rapidly changing world of increasing uncertainty. In other words, reflexivity as a dimension of quality education refers to the ability to adjust to change, especially rapid change, which is important to engaging with an uncertain future (Laurie *et al.*, 2016:229).

3.4.7 Sustainability

Sustainability refers to accepting responsibility for global environmental changes and the uncertainty of future generations' wellbeing (Nikel & Lowe, 2010:605). It also focuses on behaviour change and acceptance of the responsibilities on which one must act, or participation by all stakeholders and parties in processes of goal-setting, decision-making and evaluation (2010:599).

The dimensions framework presented above is very useful to this study, which seeks to establish how the implementation of ESD through the application of geographical fieldwork contributes to quality education. As indicated earlier, the conceptual dimensions of the framework are informed and derived from the three intersecting traditions of quality education. Thus, they are useful to achieving the objectives of this study in addressing the question of how a teaching method impacts on the quality of education at the classroom level. More specifically, the 'fabric' dimensions framework of quality in education is used in this study as an evaluative framework with which to evaluate whether or not the implementation of ESD through the application of geographical fieldwork teaching method contributes to the delivery of quality education

or not; and if it does, in what ways? The dimensions framework of quality in education serves as an analytical and conceptual tool with which quality education can be determined in any context. Barrett *et al.* (2006:15) acknowledged that "the dimensions of quality in education can serve as a basis for analysing the quality of educational innovations aimed at any aspect of the education system (e.g. policy changes, national administration, classroom interventions)". In the context of this study, the dimensions of quality framework in education is used to analyse the quality of educational innovation at the classroom level, i.e. a pedagogical intervention (cf. 5.8 and Appendix 5). The utility of the dimensions framework of quality in education was relevant in the analysis and evaluation of geographical fieldwork learning processes and outcomes as a basis for determining how the teaching method contributes to the delivery of quality education in a classroom context.

The next section examines the linkage between quality education and ESD in relation to the research study. The literature will focus on how quality education and ESD inform and enhance one another in addition to examining the learning processes and outcomes that both ESD and quality education promote in learners.

3.5 QUALITY EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

The significant and distinctive relationship between quality education and ESD was originally introduced globally by the UNDESD in 2005 (Didham & Ofei-manu, 2018:87). Moreover, quality education and ESD seek to achieve similar learning outcomes that enable learners to make decisions and choices that foster SD and they are thus complementary (Pigozzi, 2007; Ofei-manu & Didham, 2014; Kadji-Beltran *et al.*, 2016; McKeown & Hopkins, 2017). The significant role of education in promoting SD has been discussed in Chapter 2 (2.2). ESD promotes the same learning outcomes as quality education, such as the skills to continue learning throughout life, to think critically, to work cooperatively, and to seek out and apply these skills to the global challenges for sustainability (Pigozzi, 2007; Didham & Ofei-manu, 2018). Pigozzi neatly captured the relationship between ESD and quality education as follow:

> Quality education can be described as education that underpins learning for SD and that it could be defined as, education that understands the past, is relevant to the present, and has a

> view to the future. Quality education relates to knowledge building and the skilful application of all forms of knowledge by unique individuals who function both independently and in relation to others. A quality education reflects the dynamic nature of culture and languages, the value of the individual in relation to the larger context, and the importance of living in a way that promotes equality in the present and fosters a sustainable future (Pigozzi, 2010:257).

The role of ESD in contributing towards the improvement of quality education was highlighted by Didham and Ofei-manu (2018:92):

> Because of its emphasis on the importance of student-centred learning pillars and the progressive reframing of pedagogies, ESD is viewed as a powerful tool for reforming education systems and achieving overall improvements to the quality of education.

Kadji-Beltran *et al.* (2016) conducted a study that explored ESD and quality education in the Cyprian primary school education context. Their study enumerated five key areas of common ground between ESD and quality education.

1. **ESD and QE promote common dimensions:**
   ESD and QE have common dimensions (environmental, social, political and cultural) and are underpinned by principles that support sustainable living, democracy and human wellbeing, i.e. environmental protection and restoration, protection and the sustainable use of natural resources, sustainable production and consumption patterns, development of citizenship for leading responsible lives in a free society, and a spirit of understanding peace, tolerance, equity and friendship.

2. **ESD and QE are both future-oriented:**
   They uphold and convey the ideals of a sustainable world as the vision to be reached. A future-oriented education helps pupils to become active and productive citizens, instilled with a higher awareness to drive change by empowering and mobilising them. Partnerships and relationships with the community are an integral part of future-oriented education as pupils should work with real challenges in a range of real-world contexts.

3. **ESD and QE promote common skills:**
   QE provides basic skills and competencies, e.g. in literacy, language and numeracy, without which ESD would be impossible to achieve. At the same time, both ESD and QE provide life skills that help pupils to adapt to changes over a lifetime and which are necessary for social, economic and environmental well-being (e.g. cognitive, reflective, social/interpersonal and decision-making skills). ESD and QE also promote leadership skills and encourage critical reflection and decision-making that are reflected in people's personal lifestyles.

4. **ESD and QE promote objectives that reflect common attitudes and values:**

ESD and QE seek to develop values such as justice, equity, tolerance, solidarity, sufficiency and responsibility, gender equality and social cohesion. They emphasise care, integrity and honesty, sustainable living, democracy and human wellbeing in the spirit of understanding and friendship amongst all peoples, ethnic, national and religious groups and persons of indigenous origins. Awareness raising and emotional development are thus important components of both ESD and QE. Moreover, ESD and QE have to be inclusive for all people and follow a rights-based approach.

5. **ESD and QE use common teaching and learning approaches:** ESD and QE are interdisciplinary and characterised by child-centred approaches. Transformative teaching and learning approaches including knowledge construction through participation of pupils in syllabus design and through collaborative and participatory learning activities/projects; the development of critical analysis and problem-solving skills like cooperative inquiry, action research and field visits to envisage alternatives and seek solutions to real-life problems; the use of assessments and the shift from delivering education towards facilitating learning (Kadji-Beltran *et al.*, 2016:4-11).

Lotz-Sisitka and Lupele (2017) explained that a review of ESD research in southern Africa has identified three key propositions that relate to ESD learning processes and educational quality. The authors elaborated on this as follows:

- **ESD enables learning as connection:** ESD learning processes change the focus on learning to 'learning as connection' and a foregrounding of meaning-making in the learning process as a basis for efficacy and inclusivity;
- **ESD involves critical thinking, action competence, agency and developing capabilities:** ESD learning processes can enhance learners' capabilities (abilities to express and make choices about valued being and doings), critical thinking and action competence (abilities to act) and agency (evidence of action);
- **ESD learning processes help to make education relevant:** ESD learning processes can enhance the relevance of education. This can take place, for example, through various strategies such as including ESD topics in localised curricula and through place-based educational activities or the use of local audits (Lotz-Sisitka & Lupele, 2017:20).

Laurie *et al.* (2016) provide the results of an international research project that was undertaken in 18 different countries to establish how ESD contributes to quality education. The study results demonstrated that ESD in primary and secondary school education contributes in many ways to quality education. Results indicated that:

1. **ESD improves test scores** and helps achieve other desired outcomes, such as improved student attendance and problem-solving skills;

2. **ESD increases the relevance** of students' learning content. It gives more meaning to a school curriculum that is well adapted to local themes and priorities. Increased curricular relevance associated with ESD leads to increased student engagement and commitment;
3. **ESD provides students with opportunities to identify relevant issues** and work through the process of finding appropriate solutions. The more practice students have in facing today's real-world issues, the more likely they will be able to address the problems they face in future. ESD contributes to developing students' abilities and confidence;
4. **ESD helps connect schools and stakeholders** within the community. When students engage in local issues, opportunities arise for them to learn more about their community;
5. **ESD promotes innovative teaching approaches and methodologies,** such as project-based learning, experiential education, cooperative and peer learning and teaching and feedback (Laurie *et al.*, 2016:233-239).

Taking into account the prevailing relationship between quality education and ESD, Ofei-manu and Didham (2014) proposed for the advancement of 'Quality Education for Sustainable Development' (QESD); according to them, this is an approach to education that combines ESD and the quality education needed for accelerating the attainment of the SGD education goal (cf. Figure 3.4).

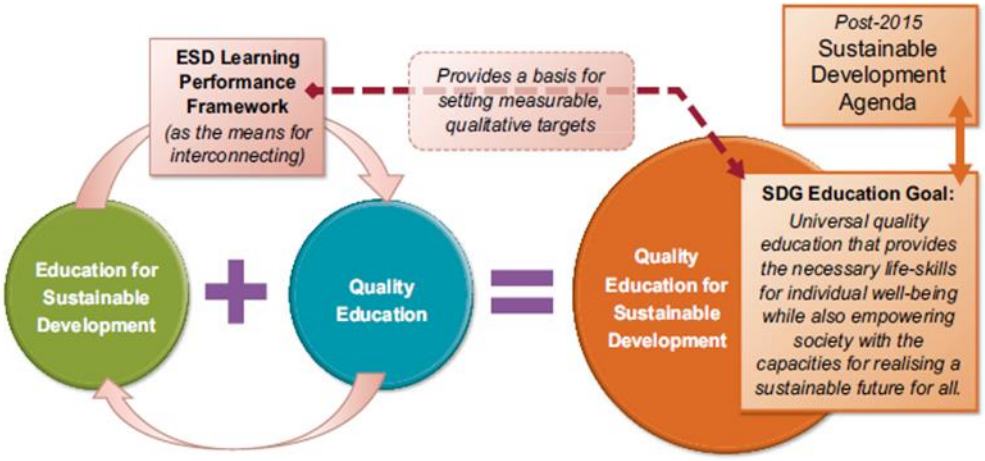

Figure 3.4: LPF: A schematic representation of the proposed relationship between ESD and QE (through application of a QESD learning performance framework (LPF) (Ofei-manu & Didham, 2014:2)

Ofei-manu and Didham (2014:2) postulate that QESD:

- Helps to make appropriate educational institutions and programmes available and accessible to everyone;
- Ensures that educational content and teaching processes are acceptable and capable of adapting to the changing needs of learners and society;

- Incorporates the holistic perspectives of ESD through transfer of relevant knowledge, skills and values and utilisation of ESD concepts, practical methods and tools (as modelled in the Learning Performance Framework (LPF);
- Equips people with the needed capacity to make conscious pro-sustainability choices in their daily lives;
- Consists of both quantitative and qualitative inputs that provide support at the policy and practice levels.

They illustrated their suggestion by explaining that the effectiveness of QESD could be meaningfully improved through the application of the Learning Performance Framework (LPF) in order to:

- Support curriculum developers in designing holistic and relevant school curricula that include transformative educational and teaching approaches;
- Strengthen teachers' competency for ESD through training on the LPF and its application;
- Guide school administrators to develop safe learning environments that serve as models of sustainability and support experiential education;
- Encourage education policy makers to consider transformative learning approaches in educational reforms and the integration of ESD into standard educational policy (Ofei-manu & Didham, 2014:1).

The discussion in this section has identified the relationship between ESD and quality education, which is characterised by their common ground in terms of promoting similar learning outcomes in learners. Based on that analysis, the actualisation of the learning outcomes that both approaches to education seek to promote can be achieved simultaneously through the adoption the LPF and its application to educational planning and implementation processes in various settings. The next section introduces and discusses the Learning Performance Framework (LPF) (Ofei-manu & Didham, 2014) as a device for strengthening QESD. The section will indicate how the LPF is applicable to this study.

3.6 THE PEDAGOGICAL NEXUS BETWEEN EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND QUALITY EDUCATION (QE): THE LEARNING PERFORMANCE FRAMEWORK (LPF)

The previous section highlighted the existing relationship between ESD and quality education; most importantly, the section described how ESD contributes to quality

education. This section aims to shed light on the pedagogical connection between ESD and quality education. That will be established by engaging with the ESD Learning Performance Framework (LPF) (Figure 3.5).

As observed in section 3.5, ESD is to a large extent compatible with quality education. Gadotti (2010) noted the significance of reinforcing ESD as an effective way of promoting quality teaching and learning. Additionally, it is also acknowledged how challenging it can be to practically integrate and implement ESD in formal education, let alone assess and evaluate the effectiveness and the quality of ESD programmes and learning activities (Ofei-manu & Didham, 2014; UNESCO, 2014b; Laurie *et al.*, 2016; Rieckmann, 2017). Ofei-manu and Didham (2014:4) recognised that “it has been difficult to monitor and evaluate the effectiveness of ESD practices (and their corresponding contribution to SD) due to the absence of a measurable, actionable framework that brings the elements together” (20014:4). According to the authors, the ESD LPF was developed in order to identify those elements, combining them into an actionable framework, and providing a working definition to the concept of ESD (ibid.). This justification led to the development of the ESD LPF illustrated in Figure 3.5. Furthermore, the ESD LPF presents an operational model for enhancing quality education through the integration of a holistic ESD perspective into the wider pursuit of educational development (Ofei-manu & Didham, 2014:4).

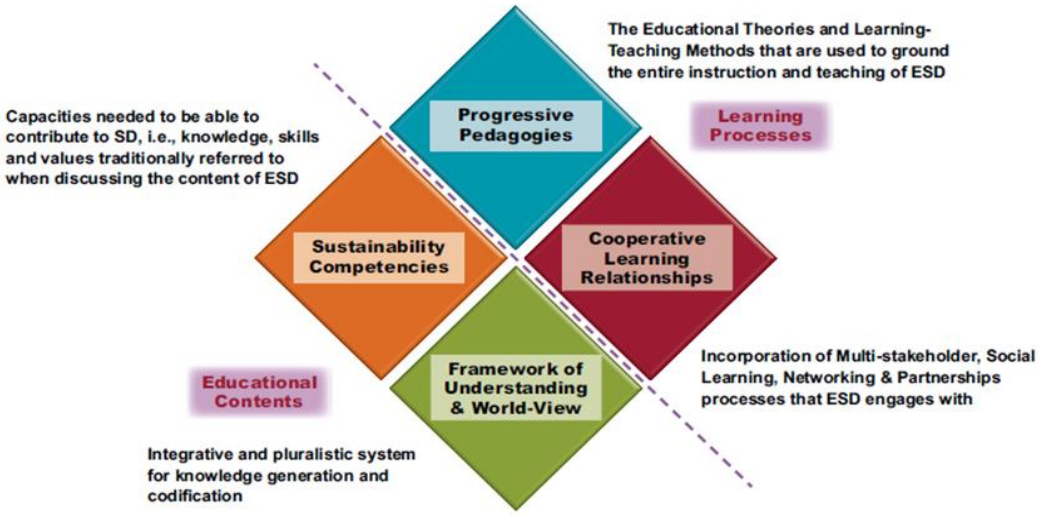

Figure 3.5: The ESD learning performance framework (LPF). A tool for consolidating QESD (Ofei-manu & Didham, 2014:5).

The ESD LPF was informed by a two-year research project that identified key elements of effective ESD practice by means of analysing a number of relevant education theories and testing them in multiple case study contexts (Ofei-manu & Didham, 2014:4). The framework defines effective ESD practice based on four elements of ESD learning performance; it also differentiates the elements based on learning processes and educational contents (ibid.). The ESD learning processes are comprised of Progressive Pedagogies (PP) and Cooperative Learning Relationships (LR), whereas educational contents consist of Sustainability Competencies (SC) and Framework of Understanding and World-view (WV).

The four educational/learning elements that encompass the ESD LPF are outlined and described below.

According to Ofei-manu and Didham (2014:5), Progressive Pedagogies (PP) entail the integration of a collection of teaching approaches under the ESD framework to extend practice beyond individual theories, methods or tools. Additionally, the PP approach is underpinned by a learner-centred approach to education because:

> The PP approach, rather than viewing students as passive receivers of abstract knowledge, places the learners at the centre of the world they are studying to facilitate an active learning process involving critical reflection and testing of information in order to contextualise knowledge in relation to practical, real world application (Ofei-manu & Didham, 2014:5).

Moreover, a detailed description of the aspects as well as the characteristics of PP was presented in Chapter 2 (2.4.2).

Another elemental characteristic of the ESD LPP is 'Cooperative Learning Relationships (LR); according to Ofei-manu and Didham (2014:6), LR refers to the inclusion of group learning, networking, collaboration, partnerships and collective knowledge generation as important educational components of ESD. It includes educational methods and approaches such as social learning, communities of practice and collaborative/ cooperative inquiry (ibid.). Table 3.1 presents aspects and characteristics of LR.

Table 3.1: Aspects and characteristics of Cooperative Learning Relationships

Aspects of Cooperative Learning Relationships (LR)
1. Creating common platforms for people to come together in an open, respectful manner to examine questions which do not have easy answers. 2. Promoting public participation to harness the power of social capital for creating change. 3. Acknowledging the power of collaborative action for harnessing differing strengths of individuals. 4. Adopting systems thinking to understand the dynamics of change in complex interactions. 5. Seeking to leverage positive interdependence through collective responsibility; members rely on one another to achieve the overall goal as the sum of their collective parts. 6. Ensuring accountability of all group participants to accomplish their share of the work. 7. Promoting appropriate use of collaborative skills through development and practice of trust-building, leadership, decision-making and conflict resolution. 8. Enabling group processing by team members as they set common goals/objectives, periodically assess their achievements, and identify necessary changes to increase effectiveness.
Characteristics of Cooperative Learning Relationships (LR)
• Inclusion and internal network structure for interaction (among social networks) and latitude given for democratic debate on the framing and definition of the issues at stake. • Group processing to establish and manage systems of knowledge and making sense of information. • Participation and power sharing, shared ownership/commonality. • Clear definition and purpose of roles. • Accountability of individual/groups. • Positive interdependence and trust building. • Opportunities for reflexive moments and discourse. • Situatedness and social skills.

Adapted from Ofei-manu and Didham (2014:6)

For Ofei-manu and Didham (2014:6), Sustainability Competencies (SC) articulate the qualities/attributes that learners need to develop to engage with sustainability issues and contribute to SD. They further maintain that "the basis of SC is the possession of relevant knowledge and the ability to think, act and take responsibility (ibid.). SC is also viewed as "one's capacity to engage with other people, as well as with one's community and society in meaningful ways on SD" (ibid:6.). Table 3.2 shows a number of aspects as well as characteristics of SC. Chapter 2 section 2.4.3 provides further explanation on key SCs.

Table 3.2: Aspects and characteristics of Sustainability Competencies (SC).

<table>
<tr><th colspan="3">Aspects of Sustainability Competencies (SC)</th></tr>
<tr><td colspan="3">1. Comprises a diversity of knowledge, skills and values, and is traditionally what is mainly referred to when discussing the contents of ESD.
2. Knowledge competencies for SC include the discipline-specific content.
3. Skill-based learning outcomes for ESD emphasise learning processes as much as fact-based learning.
4. Values supportive of ESD provide a basis for a critical though often difficult-to-measure affective dimension of ESD.</td></tr>
<tr><th colspan="3">Characteristics of Sustainability Competencies (SC)</th></tr>
<tr><th>Knowledge</th><th>Skills</th><th>Values</th></tr>
<tr><td>• Climate Change
• Disaster Risk Reduction
• Sustainable Consumption and Production/ Education for Sustainable Consumption, Indigenous Knowledge,
• Information and Communication Technologies (ICT) and use in ESD
• Wellbeing, Development and Environmental Quality
• Resilience and Socio-ecological Systems.</td><td>• Critical and complex thinking
• Seeking alternative solutions
• Real-world problem solving
• Future-mindedness
• Adapting to and advocating for change
• Social action, collaboration and cooperation
• Conflict resolution, negotiation, creativity and imagination</td><td>• Respect, care and empathy
• Charity, social and economic justice
• Citizenship and stewardship
• Empowerment and motivation
• Commitment, cooperation and compassion
• Self-determination and self-reliance
• Resilience, optimism and tenacity
• Self-restraint, passion and</td></tr>
</table>

	• Interdisciplinary and transdisciplinary research skills • Adaptive learning • Contextualisation of issues • Personal introspection, visioning and buy-in to identifying change and adapting to it • Systems thinking and thinking that is focused on values	emotional intelligence • Assertiveness and persuasiveness • Authenticity and ethical self-awareness • Competence and curiosity • Interdependence

Adapted from Ofei-manu and Didham (2014:6-7)

Ofei-manu and Didham (2014:7) state that:

> Framework of Understanding and World-View addresses the prevailing system for knowledge generation and codification that looks at the types of contextual frameworks and schemas through which individuals shape meaning from diverse knowledge and understand reality. In the context of ESD, WV takes on an inter/trans-disciplinary and integrative nature, and it is associated with paradigm shifts.

The authors further stress that:

> In ESD systems thinking, cross-boundary thinking, integration and other similar concepts shape people's world-view and provide an opportunity to critically reflect on and question present ideas and concepts about nature and the environment and our individual contributions to their deterioration or advancement (Ofei-manu & Didham, 2014:7).

Table 3.3 illustrates aspects and characteristics of Framework of Understanding & World-view.

Table 3.3: Aspects and characteristics of Framework of Understanding and World-View (WV).

Aspects of Framework of Understanding and World-View (WV)
1. Generating explanations for whole systems, incorporating experiential understanding and focus on emergent properties of the whole rather than isolated parts. 2. Structuring knowledge-inquiry to obtain synthesis and holistic understanding based on integrating different disciplinary perspectives. 3. Providing important insights into how whole systems generally embody emergent properties (characteristic of systems) and therefore offer an understanding of why a system is greater than the sum of its parts. 4. Perceiving problems in their entirety and how the various parts interrelate across conceptual boundaries 5. Examining ideas and assertions critically and investigating asymmetric power relations as well the modes of power legitimisation. 6. Advancing learners' ability for critical inquiry and self-reflection as they examine the world through the lens of sustainability. 7. Identifying differences in relative terms and how object consciousness develops in social contexts. 8. Recognising patterns through observable repetitions of situations that have a familiar feel, be it activity or design.
Characteristics of Framework of Understanding and World-View
• Holism and integration – focusing on the whole rather than the parts. • Systems perspective or whole systems thinking. • Interdisciplinarity and cross-boundary approaches. • Cultural relativism and social constructivism. • Pattern recognition and system design from patterns to details (i.e. synergy).

Adapted from Ofei-manu and Didham (2014)

Ofei-manu and Didham (2014:4) emphasise that the ESD LPF can equally serve as a "concrete guide to designing and implementing effective ESD and also provide the basis for developing progressive indicators for monitoring the qualitative achievements of ESD". In the context of this study, the ESD LPF served as a pedagogical guide in developing effective ESD teaching and learning activities at the classroom level (cf. 4.3). The fabric multidimensional framework of quality in education (cf. 3.4) provided the framework for evaluating how ESD learning processes and outcomes through the application geographical fieldwork as a teaching method contributes to quality education in the context of this study. The reason for using the ESD LPF as a pedagogical guide was in line with Ofei-manu and Didham's (2014:8) assertion that:

> The ESD LPF holistically combines under a single framework several related yet distinct elements that can guide progress in teaching and learning methods, activities and outcomes of ESD practice.

Moreover, the ESD LPF "provides the means for bridging the two important educational endeavours of achieving quality education and education for sustainable development" (Ofei-manu & Didham, 2014:8), both of which are the focus of this study.

This research study aimed to find out how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education (i.e. quality teaching and learning) at the classroom level in the Namibian senior secondary school Geography curriculum. The above account of the ESD LPF directed the researcher's decision-making in identifying and selecting a theoretical framework consistent with the four elements of ESD LPF (discussed in Chapter 4).

3.7 CONCLUSION

This research study is framed with reference to Goal 4 of the SDGs and is focused on investigating how ESD contributes to quality education and solidly grounded within a sub-Saharan African school context. The study examined quality education from a pedagogical perspective fixed on the teaching and learning interface within a school classroom setting. As illustrated in this chapter, quality education is a multifaceted concept which is currently receiving considerable attention from both academia, state authorities and international development agencies. This chapter focused on reviewing the literature that aided in situating the study within the ESD quality education conceptual framework within a sub-Saharan African school context. The chapter provided an overview of three intersecting traditions of quality in education. The literature on the concept and meaning of quality education in relation to how it is conceptualised and interpreted in sub-Saharan Africa was unpacked and explained.

A framework for understanding, monitoring and improving the quality of education was also presented and explained. The chapter also introduced and discussed the dimensions model of quality in education, a framework for understanding educational quality in low- and middle-income countries. The relationship between quality education and ESD was examined and clarified. The chapter concluded with an

exploration of the pedagogical nexus between ESD and quality education by means of analysing the ESD LPF in relation to its relevance to this study.

The following chapter discusses the theoretical framework for the effective integration and implementation of ESD in the Namibian senior secondary school Geography curriculum.

4 THEORETICAL FRAMEWORK

4.1 INTRODUCTION

As outlined in the previous chapters, this study is located in the fields of ESD and quality education. It has an interest in how ESD teaching and learning processes impact on learning outcomes in a formal school context. Chapter 3 shed light on the similarities between ESD and quality education by highlighting how they mutually promote similar learning outcomes for learners. There are limited research studies on how ESD teaching and learning processes in Geography contribute to quality education in school classrooms. Consequently, there is a lack of understanding on how Geography teachers design, integrate and implement effective ESD teaching and learning activities that contribute to the delivery of quality education in classroom contexts. Thus, there is a need to explore and establish how ESD learning processes and outcomes through the application of geographical fieldwork as a teaching method contribute to quality education in the context of this study.

This chapter introduces and justifies the selection and application of a theoretical framework informing the design of an innovative pedagogical intervention for effective integration and implementation of ESD through the application of a geographical fieldwork teaching method. The theoretical framework combines a social constructivist theory of learning and the 'strengths model' to ESD. Utilising a theory-based framework for any education intervention can guide the planning and implementation of pedagogical interventions in school settings.

Two key factors influenced the researcher to adopt a theory-based framework in this study as a basis for addressing the research objectives. Firstly, the nature of the research design dictated that the researcher should be reflexive in response to a need for pragmatic guidelines on how to address the identified pedagogical challenges constraining classroom teachers to integrate and implement ESD through the application of learner-centred teaching methodologies i.e. fieldwork (cf. 2.5 and 6.4). The researcher accordingly adopted "a variety of theoretical perspectives and practical methodologies to solve the problems" (Le Grange, 2005:1449). Secondly, one motivation underpinning the configuration of the research study was a need for the

researcher and the research process to contribute towards the UNESCO (2014b) *Global Action Programme (GAP): Priority Action Area 3,* which emphasises the need to increase the capacities of educators and teacher' educators to more effectively deliver ESD.

The theoretical framework informed the design and implementation of a pedagogical intervention that was implemented by the teachers who participated in this study (cf. 6.6). Moreover, the intervention was designed to model effective ESD practice consisting of education contents and learning processes based on the elements of the ESD LPF (cf. 3.6).

4.2 THEORETICAL FRAMEWORK INFORMING THE PEDAGOGICAL INTERVENTION

A theoretical framework denotes a theory that a researcher selects to guide his/her research process (Imenda, 2014). It refers to the application of a theory or "set of concepts drawn from one and the same theory, to offer an explanation of an event, or shed some light on a particular phenomenon or research problem" (2014:189). Thus, a theoretical framework functions as a guide to building and supporting a research study (Grant & Osanloo, 2014). It offers the appropriate structure defining how the researcher approaches the entire research study philosophically, epistemologically and analytically (ibid.). In that regard, the study required the adoption of appropriate theories in order "to help interpret and explain phenomenon" (Rule & John, 2015:2) of how the integration of ESD in the teaching process could be interpreted. Additionally, this study intended to explore how teaching and learning processes impact on quality education viewed from the perspectives of the teachers and learners, i.e. the research participants. It was thus important to select an appropriate learning theory relevant to the focus of the study.

That is because "Learning theories provide empirically based accounts of the variables which influence the learning process, and provide explanations of the ways in which that influence occurs" (Alzaghoul, 2012:27). In addition to providing a description of how people learn, a learning theory assists in enabling people to understand the complex process of learning itself (ibid.). Learning theories provide the foundation for the selection of instructional strategies and allow for reliable prediction of their

effectiveness (Khalil & Elkhider, 2016:147). The three most familiar learning theories are behaviourism, cognitivism and constructivism (Ertmer & Newby, 1993; Alzaghoul, 2012). As indicated earlier, this study adopted a learner-centred approach to teaching and learning and it drew on social constructivism framework, and on the 'strengths model' as theoretical perspectives for the study.

Social constructivism provided the basis for framing and operationalising the concept of learner-centred pedagogy, whereas the 'strengths model' provided a theoretical lens to help explain how Geography as a school subject contributes significantly to the integration and implementation of ESD in the school curriculum.

The two theoretical frames presented above were applied to the design and implementation of a geographical fieldwork pedagogical intervention that enabled teachers to actively engage learners with ESD learning activities and experiences (cf. 6.5). The two theoretical frames are further discussed below.

4.2.1 Social constructivist learning theory

The philosophy of teaching and learning espoused by the Namibian formal school curriculum is based on the concept of learner-centred education (cf. 2.6.2). NIED (2003) maintains that the teaching and learning envisaged in the Namibian curriculum "is within broad parameters of constructivism, tending towards social constructivism" (NIED, 2003:8).

Social constructivism is a theory of knowledge in sociology and communication theory that examines the knowledge and understandings of the world that are developed jointly by individuals (Amineh & Asl, 2015:13). This epistemology posits that humans create knowledge and meaning out of an interaction involving their experiences and their ideas (Mutekwe, Ndofirepi, Maphosa, Wadesango, Machingambi, 2013). Constructivists underscore the social construction of reality (ibid.).

Historically, the theory of social constructivism in education is associated with the work of Lev Vygotsky, who stressed the importance of social interactions in learning (Vygotsky, 1978). Social constructivism emphasises that learners construct their own knowledge by interacting with teachers or with other competent peers; the premise is that knowledge is initially constructed in a social context and gradually internalised and utilised by individuals (Vygotsky, 1978; Kozulin, 1998; Amineh & Asl, 2015).

Proponents of social constructivism maintain that the process of sharing individual perspectives – i.e. collaborative elaboration – leads to learners constructing understanding together, which may not be possible if individual learners were on their own (Amineh & Asl, 2015). Central to the co-construction of knowledge and understanding is the role of scaffolding. which is the support rendered to a learner in order to attain a goal that may not be achieved without the support (Soloway, Jackson, Klein, Quintana, Reed, Spitulnik, Stratford, Studer, Eng & Scala, 1996). The purpose of scaffolding in the constructivist model is to assist "learners build knowledge representations and mental skills like those of experts, i.e. through the use of language, tools, and practice in a community" (1996:2). In addition to the above, Kalina and Powell (2009) note that "scaffolding is an assisted learning process that supports the ZPD (Zone of Proximal Development), or getting to the next level of understanding, of each student from the assistance of teachers, peers or other adults" (Kalina & Powell, 2009:244). The Zone of Proximal Development (ZPD) is described as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978:86). Drawing on the work of Vygotsky (1978) with regard to the ZPD in a classroom context, Kalina and Powell (2009:244) give an example:

> An example would be an activity where a student works on the assignment with aid from the teacher. Once students achieve the goal of the initial activity, their zone grows and the students can do more. This involves the social constructivist method where students act first on what they can do on their own and then with assistance from the teacher, they leam the new concept based on what they were doing individually.

Cooperative learning and collaborative activities are an integral component of a social constructivist approach to teaching (Kalina & Powell, 2009; Mutekwe *et al.*, 2013). Social constructivists assert that learners should not only engage with teachers one-on-one, but also that learners should be encouraged to interact with other learners in the classroom (Kalina & Powell, 2009). That is because learners "work best when engaged in collaborative activities as this enables them to share their different experiences and perspectives with each other thereby socially constructing knowledge (constructivism)" (Mutekwe *et al.*, 2013:60). Collaborative learning activities are highly beneficial for learning, because "When students master completion of projects or activities in a group, the internalization of knowledge occurs for each individual at a

different rate according to their own experience" (Kalina & Powell, 2009:244). The learners' social interaction enables self-regulation and voluntary engagement and commitment to peer learning (ibid.). The role of teachers in a social constructivist approach to teaching and learning is that of being a facilitator of learning, i.e. initially providing slight support and helping learners and gradually withdrawing that support in order to enable learners to learn independently (Amineh & Asl, 2015). As such, learners are encouraged to construct their own understandings and then to validate, through social negotiation, these new perspectives (Ertmer & Newby, 2013:57-58).

Kalina and Powell (2009) believe that social constructivism is an extremely successful approach to teaching and learning, which all learners can profit from, because of the fact that it incorporates collaboration and social interactions through teaching and learning. The views above are corroborated by Mutekwe *et al.* (2013), who noted that a Vygotskian-informed approach to teaching and learning ensures that all learners in the classroom benefit from learning activities through active participation. That is because applying a Vygotskian approach to teaching and learning enables learners to draw from their varied socio-cultural experiences (ibid.). By drawing on their socio-cultural experiences, learners do not only engage actively during the learning process, but their individual differences are also catered for during the teaching and learning process (Mutekwe, 2018). That happens because a Vygotskian approach to teaching and learning fosters equitable learning in the classroom, thus ensuring that "many if not all learners will have an opportunity to enjoy parity in their learning processes regardless of race, sex, gender, religion, social class, ethnicity, disability, culture, or creed. (2018:63). Thus, contributes to maximising equity amongst learners during the learning process.

The following section discusses how the strengths model to ESD contributes to this study.

4.2.2 The Strengths Model to ESD

The concept of a strengths model is an innovative approach to ESD that is based on the understanding that:

> To make progress in reorienting education to address sustainability, we need to identify and recognize the current contributions of disciplines, programs, and teachers to ESD in our own school systems. Once these individual components are identified, we can weave them together

to create an integrated ESD program and teach it overtly as ESD to students (McKeown, 2002:22).

In the context of formal primary and secondary schools, the strengths model postulates that:

1. Education for sustainable development (ESD) does not belong to a single discipline;
2. Every discipline, teacher and administrator can contribute to ESD;
3. An individual or an organization should be responsible for identifying existing strands of sustainability in the curriculum and integrating them into a comprehensive ESD programme;
4. Those who carry out this integration process to create a comprehensive ESD programme must be supported and enabled by educational decision-makers (e.g. Ministries of Education) (UNESCO, 2012:41).

The strengths model posits that "Many topics inherent in sustainable development (SD) are already part of the formal education curriculum, but have not been identified as such, nor have they been seen as contributing to the larger concept of sustainability" (UNESCO, 2012:41). In teaching and learning terms, the strengths model identifies two avenues through which a school discipline/subject can contribute to ESD, namely disciplinary contributions to ESD, and pedagogical contributions to ESD (UNESCO, 2012). By way of illustration, below are examples of how disciplinary contributions to ESD on the topic of water quality can be realised in a school context.

- ***Mathematics*** helps pupils understand extremely small numbers (e.g. parts per hundred, thousand, or million), which allows them to interpret pollution data.
- ***Biology*** helps pupils comprehend the effects of pollution on organisms.
- ***Health education*** helps pupil recognize the risks to human health from pollution and the range of human tolerance of risk.
- ***Reading*** develops the ability to distinguish between fact and opinion, and helps pupils become critical readers of print media.
- ***History*** teaches the concept of global change, while helping pupils to recognize that change has occurred for centuries and that civilization has had to confront problems like water pollution.
- ***Social Studies*** helps pupils to understand ethnocentrism, racism, and gender inequality as well as to recognize how these are expressed in the surrounding community and countries worldwide (e.g. women walking for hours to fetch water for their families) (UNESCO, 2012:41).

In addition to the above, ESD derives its pedagogy from a variety of disciplines in the curriculum. They include:

- Inquiry from science;
- Spatial analysis from geography;

- Communication skills from language arts;
- Creative thinking from the arts;
- Higher-order thinking skills from a variety of disciplines (UNESCO, 2012).

As indicated above, each discipline in the school curriculum can meaningfully contribute to the integration and implementation of ESD through the contents of a discipline or through the pedagogy associated with the discipline. In the context of this research study, the discipline of Geography contributes to the integration and implementation of ESD in both ways, i.e. disciplinary contributions and pedagogical contributions (cf. 2.7 and 2.9). UNESCO (2012) provided a guideline for implementing the strengths model at a local level. In order to implement the strengths model, those responsible for the implementation should:

1. Ensure that educators and administrators understand the concepts of sustainability and ESD;
2. Examine the mandated curriculum and school activities for existing contributions to ESD;
3. Identify potential areas of the mandated curriculum in which to incorporate examples that illustrate sustainability or additional knowledge, issues, perspective, skills or values related to sustainability;
4. Integrate the existing sustainability content and the new elements to create comprehensive ESD programmes in which sustainability is explicitly taught to pupils across subject areas and throughout their years of schooling;
5. Provide professional development opportunities for teachers and create awareness among the educational community of the ESD programme (UNESCO, 2012:42).

This process for implementing the strengths mode in the context of this study were carried out during the research process (see Chapter 6) in order to undertake the integration and implementation of ESD through teaching school Geography. By engaging with research participants, a series of ESD learning activities were designed by the researcher and the research participants. The learning activities were then implemented by the participating teachers in their respective classes (cf. 6.4). The next section examines how the theoretical framework was applied to this study.

4.3 APPLICATION OF THE THEORETICAL FRAMEWORK TO DESIGN A PEDAGOGICAL INTERVENTION

The discussions above introduced and explained the two theoretical frames underpinning this research study i.e. social constructivism and the ‘strengths model’

to ESD. This section illustrates the application of this theoretical framework to the design and implementation of a geographical fieldwork pedagogical intervention. It is worth mentioning that merging the insights from the two theoretical perspectives contributed significantly to the design of a pedagogical intervention. The two theoretical constructs, i.e. social constructivist theory and the strengths model, lay the basis for designing a learner-centred pedagogical intervention that enabled the integration and implementation of ESD through the application of geographical fieldwork as a teaching method during the research process. A social constructivist theoretical frame provided theoretical and practical guidelines for developing and implementing a learner-centred pedagogy through geographical fieldwork as a teaching method. Hannafin, Hill and Land (1997:94) maintain that learner-centred approaches to pedagogy:

> are rooted in constructivist epistemology: knowledge and context are inextricably connected, meaning is uniquely determined by individuals and is experiential in nature, and the solving of authentic problems provides evidence of understanding (Hannafin, Hill & Land, 1997:94).

The description of social constructivist teaching practices and principles illustrated in Table 4.1 illustrate some useful principles and practices associated with designing pedagogical interventions that can create an ideal learner-centred learning environment (cf. 6.4).

Table 4.1: Social constructivist practices and principles

1.	***Mind:*** The mind is located in the social interaction setting and emerges from acculturation into an established community of practice.
2.	***Authentic Problems:*** Learning environments should reflect real-world complexities. Allow students to explore specializations and solve real-world problems as they develop clearer interests and deeper knowledge and skills.
3.	***Team Choice and Common Interests:*** Build not just on individual student's prior knowledge, but on common interests and experiences. Make group learning activities relevant, meaningful, and both process and product oriented. Give students and student teams choice in learning activities. Foster student and group autonomy, initiative, leadership, and active learning.
4.	***Social Dialogue and Elaboration:*** Use activities with multiple solutions, novelty, uncertainty, and personal interest to promote student–student and student–teacher dialogue, idea sharing, and articulation of views. Seek student elaboration on and justification of their responses with discussion, interactive questioning, and group presentations.

5.	***Group Processing and Reflection:*** Encourage team as well as individual reflection and group processing on experiences.
6.	***Teacher Explanations, Support, and Demonstrations:*** Demonstrate problem steps and provide hints, prompts and cues for successful problem completion. Provide explanations, elaborations and clarifications where requested.
7.	***Multiple Viewpoints:*** Foster explanations, examples and multiple ways of understanding a problem or difficult material. Build in a broad community of audiences beyond the instructor.
8.	***Collaboration and Negotiation:*** Foster student collaboration and negotiation of meaning, consensus building, joint proposals, prosocial behaviours, conflict resolution, and general social interaction.
9.	***Learning Communities:*** Create a classroom ethos or atmosphere where there is joint responsibility for learning, students are experts and have learning ownership, meaning is negotiated, and participation structures are understood and ritualized. Technology and other resource explorations might be used to facilitate idea generation and knowledge building within this community of peers. Interdisciplinary problem-based learning and thematic instruction is incorporated wherever possible.
10.	***Assessment:*** Focus of assessment is on team as well as individual participation in socially organized practices and interactions. Educational standards are socially negotiated. Embed assessment in authentic, real-world tasks and problems with challenges and options. Focus on collaboration, group processing, teamwork, and sharing of findings. Assessment is continual, less formal, subjective, collaborative, and cumulative.

Adapted from Bonk and Cunningham (1998:34)

In addition to the above points, four aspects of a successful constructivist lesson/learning unit that classroom teachers can use to effectively implement constructivist learning units/lessons are:

1. Introduction of a real-life problem by the students or teacher for the students to resolve;
2. Student-centred instruction facilitated by the teacher;
3. Productive group interaction during the learning process; and
4. Authentic assessment and demonstration of student progress (Klein & Merritt, 1994:16).

In line with the above points, Le Grange and Reddy (2007:79) maintained that:

> Learners also learn in a social context and benefit from interactions with more capable peers or adults. The rise of constructivist learning theory has led to changed environments of learning, that is, environments that encourage active and cooperative learning and where learners draw

> on a variety of material resources from which to learn, including the local environment. Integrating personal knowledge with existing knowledge in the field is crucial to learning.

Engaging learners in active classroom learning tasks such as experimentation, investigation, observation and discussion ensures effective implementation of a constructivist lesson (Klein & Merritt, 1994).

It has thus become clear why geographical fieldwork pedagogy is modelled on constructivism:

> The pedagogy of geography is often characterised by geographical enquiries based on constructivist approaches to learning which envisage students as active co-constructors rather than passive recipients of knowledge within and outside the classroom, e.g. during fieldwork and experiential learning (Naish, Rawling & Hart, 2002; Corney & Reid, 2007:37).

The contributions of Geography, as well as the contributions of geographical fieldwork teaching method, to ESD were discussed in Chapter 2 (2.7 and 2.9). It was also suggested that implementing ESD in any discipline requires the use of active learner-centred pedagogies. Using an active-learning constructivist approach to teaching sustainability issues in formal education is viewed as an ideal way of teaching (Kalamas-Hedden, Worthy, Akins, Slinger-Friedman & Paul, 2017). The authors call for the use of an active-learning constructivist approach because they maintain that "to engage in active learning, students do not learn from pre-specified content but rather learn through a programmatic process … they create their own conceptualizations and then validate them in the real world" (Kalamas Hedden *et al.*, 2017:3).

Theoretical insights derived from the application of the theoretical framework helped to inform effective ESD practice as well as the effective implementation of ESD by providing the elements of the LPF. The social constructivist theory of learning helped to frame and inform the features and understanding of ESD learning processes (i.e. Progressive Pedagogies and Cooperative Learning Relationships) based on the ESD LPF. The 'strengths' model theoretical frame provided insights and features that helped to explain the educational contents (i.e. Sustainability Competencies and Framework of Understanding and World-view) of the ESD LPF.

By combining insights from social constructivism and from a strengths model to ESD, the researcher was able to come up with a classroom pedagogical intervention derived

from theoretical insights that enabled the operationalisation of the ESD LPF. The utility of the ESD LPF was that it was a heuristic device with the function of providing a practical framework for translating the theoretical framework into classroom practice. Ofei-manu and Didham (2014:8) neatly captured the utility of the ESD LPF by stressing that:

> The ESD LPF holistically combines under a single framework several related yet distinct elements that can guide progress in teaching and learning methods, activities and outcomes of ESD practice. It thus synthesises a wide range of frameworks and concepts of ESD that can support policy processes as well as guide the actual implementation. The ESD LPF additionally provides the means for bridging the two important educational endeavours of achieving quality education and education for sustainable development into one common path for realising both sustainability and well-being for all.

Applying the theoretical framework through the ESD LPF provided insights into how ESD was integrated into and implemented in the Namibian senior secondary school Geography curriculum through the application of a learner-centred geographical fieldwork teaching method. The fabric multidimensional framework of quality in education (cf. 3.4) has been used as a conceptual lens to gain insight into how the implementation of ESD through the application of learner-centred geographical fieldwork teaching method contributes to quality education (quality teaching and learning) within the Namibian senior secondary school Geography curriculum (cf. chapter 7).

4.4 CONCLUSION

This chapter reviewed and identified relevant literature for understanding the integration and implementation of ESD in the Namibian senior secondary school Geography curriculum. The literature review provided insights into the process of bridging the theory-practice gap with regard to the successful implementation of ESD through a learner-centred approach to teaching. The next chapter presents and discusses the research design and methodology of the study.

5 RESEARCH DESIGN AND METHODOLOGY

5.1 INTRODUCTION

The previous chapters provided the context within which this research study was conceptualised. This chapter describes the research design, methodology and the methods employed to engage with research participants in order to generate empirical data to answer the research question. The chapter begins by introducing the research orientation as well as justifying the rationale for this. After that, the research methodology and a description of the research design through which the study was framed is discussed. This will be followed by a discussion on the data-generation process and methods used, including the data-analysis procedure. The procedures undertaken to enhance the validity of the study will then be described. Lastly, the steps carried out in compliance with the ethical principles of research will be explained.

5.2 INTERPRETIVE RESEARCH ORIENTATION

This study adopted an interpretive orientation with an overall aim of attempting "to understand the subjective world of the human experience" (Cohen, Manion & Morrison, 2003:22). Kivunja and Kuyini (2017:33) agree that an interpretive approach "makes an effort to 'get into the heads of the subjects being studied' so to speak, and to understand and interpret what the subject is thinking or the meaning s/he is making of the context". An interpretive orientation to research stresses the importance of research on "understanding the individual and their interpretation of the world around them" (ibid.). The study explores how the integration and implementation of ESD through the application of geographical as a teaching method contributes to quality education within the Namibia senior secondary school Geography curriculum viewed and interpreted from the perspectives of the research participants (i.e. teachers and learners). In other words, the researcher examined, interpreted and evaluated the teachers' and learners' understanding of the teaching and learning activities generated from their personal experiences of their active participation in the process of the integrating and implementation of ESD through the application of geographical fieldwork teaching method contributes to quality education within the Namibian senior

secondary school Geography curriculum. In order to accomplish that, the study relied heavily on the "participants' experiences to construct and interpret their understanding from gathered data" (Thanh & Thanh, 2015:24). The interpretive paradigm embraces the belief of a socially constructed reality (Bogdan & Biklen, 1998); and that is the reason "why sometimes this paradigm has been called the constructivist paradigm" (Kivunja & Kuyini, 2017:33). In this paradigm:

> Reality is, therefore, mind dependent and a personal or social construct…. Reality is, in this sense, limited to context, space, time and individuals or groups in a given situation and cannot be generalized into one common reality. There are individual realities as well as group-shared realities (Chilisa & Kawulich, 2012:10).

The interpretive paradigm informed the research design, data-collection methods and the selection of participants as well as data-analysis and interpretation processes. The following section discusses and justifies the selection of a qualitative research methodology for this study.

5.3 QUALITATIVE RESEARCH METHODOLOGY

As discussed in the previous section, this research study was undertaken within an interpretive paradigm, which mandated the researcher to utilise a qualitative methodology. Thanh and Thanh, (2015:24) explained that:

> There is a tight connection between interpretivist paradigm and qualitative methodology as one is a methodological approach and one is a means of collecting data. Researchers who are using an interpretivist paradigm and qualitative methods often seek experiences, understandings and perceptions of individuals for their data to uncover reality rather than rely on numbers of statistics.

Terre Blanche and Durrheim (1999:6) highlight the relevance as well as the applicability of a qualitative research methodology within an interpretive paradigm:

> Researchers working in this tradition [interpretive paradigm] assume that people's subjective experiences are real and should be taken seriously (ontology) that we can understand other's experiences by interacting with them and listening to what they tell us (epistemology), and, that qualitative research techniques are best suited to this task (methodology).

In other words "qualitative researchers are interested in understanding the meaning people have constructed, that is, how people make sense of their world and the

experiences they have in the world" (Merriam, 2009:13). Additionally, qualitative researchers study phenomena in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them (Denzin & Lincoln, 2005:3). As illustrated above, qualitative inquiry was the most appropriate approach for this study. The reason being that the researcher was interested in finding out how research participants, i.e. Geography teachers and learners made meanings out of the teaching and learning opportunities presented by the integration and implementation of ESD through geographical fieldwork as a teaching method.

Based on these justifications, qualitative research was deemed the most appropriate approach for this study because of the researcher's attempt to try and understand the perspectives of participants and the meaning they gave to phenomena in their natural settings (Hancock, Windridge & Ockleford, 2007; Merriam, 2009).

5.4 RESEARCH DESIGN

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 2004:31). Yin (2011) is of the view that research designs are logical blueprints that involve linking the research questions, the data collection procedure and the approaches to data analysis. The purpose of the research design is to ensure that the findings of the research study are consistent with the intentions of the research questions (ibid.). Cohen, Manion and Morrison (2003) maintain that the choice of a research design depends on the motive and objectives of the research study. The purpose of this study was two-fold: firstly, to explore Geography teachers' understanding and application of geographical fieldwork as a teaching method, as well as to explore Geography teachers' conceptualisation, integration and implementation of ESD in their classroom practices; secondly, to investigate and establish how the implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education within the Namibian senior secondary school Geography curriculum. Therefore, the study required a research design consistent with the research purpose and task at hand as outlined above.

Qualitative researchers have a wide variety of research designs to make use of, including "the case study, phenomenological and ethno-methodological techniques,

as well as the use of grounded theory, the biographical, historical, action, and clinical methods" (Denzin & Lincoln, 1994:14).

This study adopted a collaborative action research design. Thus, the study entails qualitative action research. An action research methodological framework was the most suitable design for this study, because it enabled the researcher to venture into a sequence of research activities:

- Undertaking a small-scale reconnaissance study on the application of geographical fieldwork as a teaching method in certain secondary schools in Namibia; thus, familiarising the researcher with teachers' classroom practice (Phase 1);
- Generating insights into teachers' understanding, conceptualisation and implementation of ESD in their teaching practice (Phase 1);
- Working with teachers to collaboratively integrate ESD into their teaching practice through the design of a geographical fieldwork pedagogical intervention (Phase 1);
- Observing the implementation of ESD through the application of geographical fieldwork pedagogical intervention by teachers (Phase 2);
- Analysing and interpretation of the research data on the implementation of ESD through the application of geographical fieldwork as a teaching method in order to evaluate how it contributes to quality education in the context of the research study (Phase 2).

The action research process in this research study was undertaken in conformity with Schumacher and McMillan's (2006:414) description of action research as a "process of using research principles to provide information that educational professionals use to improve aspects of day-of-day practice" (Schumacher & McMillan, 2006:414). It was also undertaken in accordance with UNESCO's (2018) recommendation outlining the relevance and applicability of an action research approach to integrating ESD concepts, principles and values in teaching and learning in formal education (cf. 1.8). Kemmis and McTaggart (2005:273) maintain that "classroom action research typically involves the use of qualitative interpretive modes of inquiry by teachers (often with help from academics) with a view to teachers making judgements about how to improve their own practice". In the context of this study, the researcher engaged with Geography classroom teachers in Namibia by assuming the responsibilities of an academic as part of his PhD studies at Stellenbosch University in South Africa. Through the utilisation and application of research findings, the researcher was able to work with Geography teachers in a collaborative process in order to gain an in-depth understanding into how teachers implemented theoretical guidelines that enabled

them to integrate and implement ESD in their teaching practice (see Chapter 6). Similarly, the action research process enabled the researcher to utilise research principles in order to establish how the integration and implementation of ESD through the application of geographical fieldwork teaching method by classroom teachers contributes to the delivery of quality education within the Namibia senior secondary school Geography curriculum (cf. Chapter 7).

Using qualitative methods, the following section discusses the action research process carried out in the context of this study.

5.4.1 Collaborative Action Research (CAR) Design and the Investigation Process

As indicated earlier, the researcher drew on action research because the nature of the research question as well as the research objectives; they necessitated an action research process in order to encourage teachers to engage with the question of 'the integration and implementation of ESD through the application of geographical fieldwork as a teaching method in their classroom practice'. The researcher was also interested in investigating how the application of geographical fieldwork as a teaching method by classroom teachers contributes to quality education within a school Geography curriculum. Schumacher and McMillan (2006) are of the view that the research questions posed in action research "are rooted in practice, perhaps by K-12 teachers working in classrooms, administrators identifying and implementing guidelines, counsellors practicing in schools and colleges, or faculty teaching at colleges and universities" (2006:414). In the case of this study, the researcher was interested in finding out how a teaching method can impact on the quality of education in a classroom setting. Thus, the research question was rooted in practice and the research goal was focused on generating evidence on how the application of a teaching method (geographical fieldwork) by classroom teachers can contribute to the provision of quality education in schools. This led to the identification and selection of a collaborative action research approach to the research investigation process.

Calhoun (1993:62-65) identified three approaches to educational action research:

1. **Individual teacher research:** Usually focuses on changes in a single classroom. A teacher defines an area or problem of interest in classroom management, instructional strategies or

materials, or students cognitive or social behaviour. The teacher then seeks solutions to the problem;

2. **Collaborative action research:** Can focus on problems and changes in a single classroom or on a problem occurring in several classrooms. The research team may include a few as two persons, or it may include several teachers and administrators working with staff from a university or other external agency;
3. **Schoolwide action research:** In schoolwide action research a school faculty selects an area or problem of collective interest, then collects, organizes and interprets on-site data. Schoolwide action research focuses on the school improvement.

This study adopted a collaborative action research approach because "it involves those responsible for action in improving it" (Kemmis & McTaggart, 1992:22). It is considered collaborative action research because the researcher and the teacher participants joined forces in working together to address the identified challenges encountered during the research process (Holly & Whitehead, 1986). Cohen, Manion and Morrison (2003:226) maintain that action research is beneficial and can be utilised in a variety of areas, for example:

Teaching methods: replacing a traditional method by a discovery method;

Learning strategies: adopting an integrated approach to learning in preference to a singular-subject style of teaching and learning;

Continuing professional development of teachers: improving teaching skills, developing new methods of learning, of increasing powers of analysis, and of heightening self-awareness.

The purpose of this collaborative action research process was twofold: firstly, to work with teachers in order to support them to integrate and implement ESD principles in their teaching practices through the application of a geographical fieldwork teaching method; secondly, to evaluate how the implementation of ESD through the application of geographical fieldwork teaching method contributes to quality education, i.e. qualitative learning outcomes in Geography learners. In order to achieve this purpose, a collaborative action research process was deemed appropriate. The researcher embraced an action role during the research process, which involved being actively engaged with the research participants, i.e. teachers. In Yin's (2011:17) words, action research "emphasises the researcher's adoption of an action role or an active collaboration with study participants". The action role in the context of this study involved actively engaging with teachers in "a straightforward cycle of: identifying a problem, planning an intervention, implementing the intervention, [and] evaluating the outcome" (Cohen, Manion & Morrison, 2000:241). McNiff, Lomax and Whitehead

(1996:22) agree that action research operates in cycles or spirals of planning, executing and fact finding. Figure 5.1 indicates the steps of one action research cycle undertaken in this collaborative action research process involving the research participants.

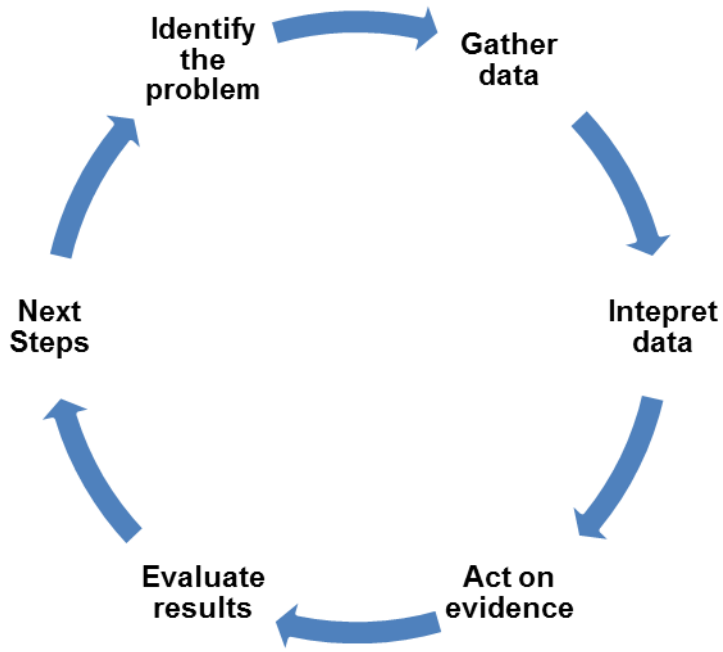

Figure 5.1: The action research cycle indicating steps undertaken

The action research cycle presented in Figure 5.1 above constituted the cycle of the entire collaborative action research process for this study. Below is a discussion of the collaborative action research process under to the following sub-headings:

1. Identification of problem area;
2. Collection and organisation of data;
3. Interpretation of data;
4. Action based on interpretation of data;
5. Evaluate results; this will permit teachers to reflect on the process and outcome (Ferrence, 2000:9).

5.4.2 Description of the Collaborative Action Research Cycle

Drawing on the action research process illustrated in Figure 5.1, a description of each step follows below.

5.4.2.1 Identification of problem area

Based on the researcher's intentions to explore how ESD was being integrated and implemented by Geography teachers in the Namibian senior secondary school Geography curriculum, the researcher was led to find out how Geography teachers understood and conceptualised ESD, including finding out how teachers integrated and implemented ESD in their classroom teaching practice. The reason for the selection of the school subject Geography was arrived at as a result of the researcher's background and experience of being a Geography teacher in the past, i.e. the researcher is more familiar with teaching school Geography. The researcher was drawn to active learner-centred teaching methods such as fieldwork, because the Namibian formal education policy recommends a learner-centred approach to teaching and learning in schools. Learner-centred teaching methods are also recommended for effective implementation of ESD (cf. 2.4.1). This formed the basis of the study, namely to investigate how the implementation of ESD through the application of geographical fieldwork could contribute to quality teaching and learning within the Namibian senior secondary school Geography curriculum. However, in Namibia, fieldwork within school classroom contexts is not being implemented effectively or at all by teachers. Kanyimba (2002) revealed that fieldwork, as teaching method is hardly applied as a teaching method in most secondary school classrooms in Namibia. Anyolo (2015) further reported that a number of secondary school Geography teachers in Namibia mostly employ the lecture as well as the question-and-answer methods to the teaching of Geography in schools. The researcher was interested in finding out more about factors impeding Geography teachers from using fieldwork as a teaching method in their classroom practice. As indicated above and given the above perceived absence of fieldwork teaching and learning activities in Namibian secondary school Geography classes, the researcher became interested in exploring the issue further through action research.

Berg (2004:198-199) elaborated that:

> The first stage of the action research process involves the researcher assisting the people in the research population – who may be called the stakeholders – to examine their situation and to recognize their problems. Alternatively, the researcher may identify a problem and bring it to the attention of the stakeholders. It is important for the action research investigator to recognize

that the issues to be studied are considered important by the stakeholder and are not simply of interest to the researchers.

The researcher accordingly formulated a set of questions for Geography teachers with a view to finding out their views, perceptions and experiences of geographical fieldwork in relation to their classroom practice (cf. Appendix 1A). The following sections describes the process through which the researcher collected data on the teachers' classroom practice.

5.4.2.2 Collection and organisation of data (reconnaissance study)

According to Tripp (2005:9), action research starts with a reconnaissance study that is "a situational analysis which produces a broad overview of the action research context, current practices, participants, and concerns". The purpose of this step of the action research process was to collect data in order for the researcher to familiarise himself with teachers' classroom practices. The researcher collected data by conducting a small-scale qualitative survey involving semi-structured interviews with 6 accessible secondary school Geography teachers in Namibia. The small-scale survey was conducted in order to find out teachers' understandings and their application of geographical fieldwork in relation to their classroom practice. Berg (2004:198) stresses that "the first stage of the action research process involves the researcher assisting the people in the research population to examine their situation and to recognise their problems". The collection of data at this point was an important step in deciding what action would be taken (Ferrence, 2000). After data were collected from the teachers, they were analysed and interpreted in order to "identify major themes" (Ferrence, 2000:12) in relation to how teachers applied geographical fieldwork as a teaching method, including how they integrated and implemented ESD in their teaching practice. According to Berg (2004:199), "data analysis, from the action research perspective, involves examination of the data in relation to potential resolutions to the questions or problems identified during the first stage of the research process". The data were analysed in order to generate descriptive data of teachers' classroom practices in relation to the integration and implementation of ESD in their teaching as well as to gain an understanding of teachers' application of fieldwork as a teaching method. A detailed description of teachers' understanding and application of geographical fieldwork as a teaching method is presented in Chapter 6 (6.2.1). A detailed discussion on how Geography teachers conceptualised, integrated and

implemented ESD in their teaching practice is also presented in Chapter 6 (6.3.1 and 6.3.2).

5.4.2.3 Interpretation of data

This part of the research investigation process constituted the 'reflection' and 'planning' aspects of the action research process which, according to Tripp (2005:10), usually "begins with reflection on current practice in order to identify what to improve … reflection is also essential to effective planning, implementation, and monitoring". Reflection and planning in the context of this study enabled the researcher and the research participants to reflect on the findings of the small-scale-qualitative survey. However, only 2 out of the 6 teachers who took part in the small-scale qualitative survey expressed a willingness to continue participating in the research study. Two sessions were planned for the reflection and planning activities in this part of the process, i.e. a reflection session (cf. 6.4) and action planning session (cf. 6.5).

In addition to sharing the analysed small-scale qualitative survey data, the researcher facilitated a lesson planning session with the 2 participating teachers in order to plan/develop an intervention based on the interpreted data. Berg (2004:201) suggests that "one of the operative principles of action research is to inform and empower people to work collectively to produce some beneficial change". Ferrence (2000:12) proposed that "using the information from the data collection and review of current literature, design a plan of action that will allow you to make a change and to study that change". The lesson planning session led to the design of a fieldwork pedagogical intervention. A detailed description of the planning session is explained in Chapter 6 (6.5).

5.4.2.4 Action based on interpretation of data

This step of the action research process enabled the two participating teachers to implement the planned geographical fieldwork pedagogical intervention, i.e. a sequence of teaching and learning activities consisting of four classroom lessons and one fieldwork learning activity outside the classroom. Both teachers implemented the lessons in their respective classrooms. The researcher observed the teachers' lesson implementation processes and recorded the teaching-learning interactions which emerged. Ferrence (2000:12) recommends that "While the new technique is being

implemented, continue to document and collect data on performance". The researcher noted all his observations as fieldnotes in a research journal and made audio recordings of learners doing classroom presentations of their work during the last lesson after the fieldwork learning activities. A detailed description of all teaching and learning activities that took place is presented in Chapter 6 (6.6).

5.4.2.5 Evaluation of results

The evaluation process for this study was consistent with that described by Schumacher and McMillan (2014:485), who maintained that "action research is judged by criteria related to its primary purpose, i.e. to change practice and solve the identified problem that prompted the study". In the context of this study, the evaluation was conducted in terms of the impact of the implemented intervention on the delivery of quality education in the context of the research question and research objectives. In order to accomplish that, a focus group discussion session with the two teachers facilitated by the researcher enabled the teachers to provide their reflections on the intervention they implemented. During the focus group discussions, teachers were requested to reflect on the teaching and learning processes and outcomes in the context of the intervention (5.6.4 and 6.7.1). Similarly, the learners from the two teachers' classes were also presented with an opportunity to share their reflections on the intervention through focus group discussions (5.6.4 and 6.7.2). In order to evaluate the results of the intervention and answer the research question, data generated through the focus group discussions with teachers and learners were analysed and interpreted (see Chapter 7).

5.4.2.6 Next steps

Since action research is typically designed in spirals of action, this study only served as a first spiral and a base upon which to build second and subsequent spirals (which will not form part of this research study). It was also challenging to undertake a study of this nature across secondary schools in Namibia, or in a widely representative set of schools. The next section explains both the sample size and how the researcher selected the sample of teachers and learners who participated in the study.

5.5 SAMPLING AND SELECTION OF PARTICIPANTS

A purposive sample (Schumacher & McMillan, 2006) of 6 senior secondary school Geography teachers participated in the small-scale qualitative survey through a semi-structured interview format. Only 2 teachers agreed to participate in the Phase 2 of the study (intervention). The 6 Geography teachers were identified and selected by the researcher for practical reasons, as the teachers were easily accessible to the researcher. The schools were all drawn from the city of Windhoek in Namibia. Patton (2002:244) noted that "there are no rules on sample size in qualitative inquiry". Rather, the decision on the sample size is determined by "the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources" (Patton, 2002:244). The 6 teachers were selected because they were "informative about the topic of interest" (Schumacher & McMillan, 2006:126) as they are senior secondary school Geography teachers in Namibia. The 6 selected teachers were all drawn from five different schools. However, two of the six teachers were selected from one school. The researcher had served as a senior secondary school Geography teacher in the past.

A purposive sample of 18 learners participated in three focus group interview sessions during the research process. The learners were all drawn from the 2 participating teachers' classrooms. A total number of three classes participated in the study, because one of the two participating teachers taught two separate classes. Thus, three strata groups consisting of 6 learners each (boys and girls) were created from the stratified random sampling process.

5.6 DATA-GENERATION PROCESS

The following data-generation tools/techniques and methods were used to generate empirical data from the research participants.

5.6.1 Semi-structured interviews

Semi-structured interviews were used during Phase 1 of the study. The semi-structured interviews were conducted to probe teachers' classroom practices with respect to their conceptualisation of ESD as well as to explore how they integrated

and implemented ESD in their teaching of Geography. The researcher was also able to probe the teachers' classroom practices with regard to their understanding and application of geographical fieldwork as a teaching method. Semi-structured interviews enabled the researcher to ask open-ended questions and to probe teachers' responses (Lankshear & Knobel, 2004). Moreover, Leedy and Ormrod (2005) stated that interviews allow the researcher to investigate and prompt things that one cannot observe. They further note that through semi-structured interviews one can probe an interviewee's thoughts, values, prejudices, perceptions, views, feelings and perspectives (ibid.).

An interview guide was designed (Appendix 1A) and used to guide the interview sessions. In preparation for conducting the interviews a pilot test of the interview guide was carried out. According to Schumacher and McMillan (2006), this affords researchers the opportunity to examine and test their proposed research tool. In order to accomplish that, they suggest that "it is best to locate a sample of subjects with characteristics similar to those that will be used in the study" (Schumacher & McMillan, 2006:202). The interview guide was tested on three senior secondary school Geography teachers who were easily accessible. The result of the pilot test was considered satisfactory, because some adjustments to the wording of some questions were proposed to elucidate the questions that were identified as ambiguous. Semi-structured interviews not lasting more than 30 minutes were conducted individually with the 6 teachers who participated in Phase 1 of the study. The semi-structured interview sessions were audio recorded and transcribed in order to be analysed verbatim. Appendix 1B gives a sample of the semi-structured interview transcript.

5.6.2 Reflection and lesson planning session

During Phase 2 of the research process, i.e. immediately after the analysis of the semi-structured interviews, a reflection session and a lesson planning session were held with the two teachers (cf. 5.4.2.3 and 6.4). The researcher kept a research journal and recorded field notes during both sessions in order to document key issues that transpired during the reflection and planning sessions.

5.6.3 Lesson observations

Cohen, Manion and Morrison (2007:396) explain: "The distinctive feature of observation as a research process is that it offers an investigator the opportunity to

gather 'live' data from naturally occurring social situations". Such observations allowed the researcher to record what emerged during the four classroom lesson implementation sessions as well as during the fieldwork learning activities. The observations were recorded in a research journal as field notes.

Cohen, Manion and Morrison (2007:404) believe that an observer "is part of the social life of participants and documents and records what is happening for research purposes". Participant observation is often combined with other forms of data collection that together elicit the participants' definitions of the situation and their organising constructs in accounting for situations and behaviour (Cohen, Manion and Morrison, 2007:405). The researcher was a participant observer during the lesson implementation phase of the research process that enabled him to observe the participants and record the data in a journal.

5.6.4 Focus Group Discussions

After the completion of the intervention by the teachers, i.e. four classroom lessons and one fieldwork learning activity, the researcher held focus group discussions with the research participants. Two separate focus group discussions were held: one focus group session was held with the 2 teachers and three focus group discussions were held separately with the learners. The researcher moderated all focus group discussions.

The researcher prepared separate focus group discussion questions for the teachers (Appendix 2B) and for the learners (Appendix 3A). The focus group discussions with the teachers were undertaken to enable teachers to reflect on the implementation of the intervention in terms of teaching processes and outcomes based on their experiences. Similarly, the purpose of having the focus group discussion sessions with the learners was to provide the learners with an opportunity to express their views, perceptions and experiences on geographical fieldwork lessons and the learning activities that they participated in. According to Stewart and Shamdasani (1990:140), a focus group delivers "a rich and detailed set of data about perceptions, thoughts, feelings and impressions of people in their own words". A digital voice recorder was used to record all focus group discussion sessions. The recordings were then transcribed verbatim and analysed (Appendix 2A and Appendix 2B).

5.6.5 Research journal

The data-generation and data-collection processes were also aided by the researcher making entries on the observed actions and activities during the research process (cf. 5.6.2 and 5.6.3). In addition to the above, the researcher also felt inclined to record his reflective observations in the journal, because that was an ideal way of recording informal observations. Moreover, "Keeping a journal and regularly writing memos encourage researchers to reflect on their emerging understanding of the data" (Ezzy, 2002:72).

5.7 DATA GENERATED

Table 5.1 provides an inventory of all data generated during the research process, indicating all sources of data including the methods of data collection used.

Table 5.1: Inventory of data generated

Phase 1			
Data generation process	**Source of data**	**Purpose**	**Codes**
Semi-Structured Interviews	Six (6) Geography Teachers	1. To generate insights into teachers' conceptualisation, integration and implementation of *'Education for Sustainable Development' (ESD).* 2. To explore teachers' understanding and application of *geographical fieldwork* as a teaching method.	SSIT1 - SSIT6
Reflection meeting session Intervention planning meeting session	Two (2) Geography Teachers who agreed to participate in Phase 2 of the study.	To reflect on teachers' application of geographical fieldwork as a teaching method; and to reflect on how teachers integrate and implement ESD in their teaching practice. To plan for an intervention	FNR 16 FNP 17
5 Lesson Plans		Geographical fieldwork pedagogical intervention planning session i.e.	TLP1 - TLP5

		planning of 4 lessons and 1 fieldwork activity which integrates ESD learning activities.	
Phase 2			
Data generation process	**Source of data**	**Purpose**	**Code**
Field Notes of participant observations	Personal writings documenting classroom and fieldwork teaching and learning processes	Gather data on ESD implementation through the application of geographical fieldwork.	FNLT 1 – FNLT 5
Transcripts of classroom presentation by learners	7 learners making groupwork presentations in classroom.	Gather data on learners' ESD learning processes and learning outcomes.	LGWP1 - LGWP7
Focus group discussions (Transcripts)	18 School children (3 sessions)	Gather data on learners' views, perceptions and experiences on ESD learning processes and learning outcomes through geographical fieldwork as a method of learning.	FGDL1 - FGDL18
Focus group discussions (Transcripts)	2 Teachers	Gather data on teachers' views, perceptions and experiences on the implementation of ESD through the application the application of geographical fieldwork teaching method.	FGT1 and FGT2

5.8 DATA ANALYSIS AND INTERPRETATION

A qualitative data analysis method was an ideal method for the analysis of data for this study. Schumacher and Mcmillan (2006:364) maintain that qualitative data analysis "Is a relatively systematic process of coding, categorizing, and interpreting data to provide explanations of a single phenomenon". The study had two phases of data analysis and both utilised qualitative content analysis technique as a data-analysis method. Qualitative content analysis can be defined as "any qualitative data-reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002:453). Put succinctly,

qualitative content analysis “involves a process designed to condense raw data into categories or themes based on valid inference and interpretation” (Zhang & Wildemuth, 2009:319). Hsieh and Shannon (2005) identified three approaches to qualitative content analysis, namely conventional, directed and summative. All three approaches are used to interpret meaning from the content of text data (ibid.). This study applied conventional content analysis for data generated in Phase 1 of the study, and a directed content analysis approach was applied to analyse data generated during Phase 2 of the research study.

In Phase 1 the researcher applied conventional content analysis, which according to Hsieh and Shannon (2005:1279), “is generally used with a study design whose aim is to describe a phenomenon”. In the context of this study the purpose of data analysis for Phase 1 was two-fold: firstly, to describe and interpret Geography teachers’ understanding and application of geographical fieldwork as a teaching method; secondly, to describe Geography teachers’ conceptualisation, integration and implementation of ESD in their classroom practice. An inductive approach to data analysis enabled the researcher to generate data categories and themes from the semi-structured interview transcripts (Zhang & Wildemuth, 2009). The data analysis process had no predetermined data categories or themes, but rather an inductive approach to the data analysis process enabled the categories and the names of the categories to emerge from the empirical data (Kondracki, Wellman & Amundson, 2002). However, some of the themes and categories emerged directly from the responses to the semi-structured interview questions. The semi-structured interview responses from all 6 teachers with regard to their understanding and application of geographical fieldwork as a teaching method led to the compilation of analytical memorandum 1 (Appendix 4).

A detailed description of Phase 1 findings is presented in Chapter 6 (6.2). The ultimate goal of Phase 1 data analysis was to inform Phase 2 of the research process, i.e. to inform the design of a geographical fieldwork pedagogical experiment.

In Phase 2 of data analysis a directed content analysis approach to qualitative data analysis was applied by the researcher to analyse and interpret the data. According to Hsieh and Shannon (2005:1281), “with a directed approach, analysis starts with a theory or relevant research findings as guidance for initial codes”. In the context of this

study, the data analysis drew insights from Nikel and Lowe's (2010) fabric of dimensions of educational quality framework to direct the data-analysis process. That is because the goal of a directed approach to content analysis is to validate or extend conceptually a theoretical framework or theory (Hsieh & Shannon, 2005:1281). Hence, the researcher developed a theoretically informed analytical framework (cf. Table 5.2) with which data were analysed and interpreted. The categories of the analytical framework were underpinned by Nikel and Lowe's (2010) seven-dimensional framework of quality in education (cf. 3.4).

Table 4: Framework for analysing and interpreting how ESD contributes to QE

Analytical categories of quality and central concern	**Evidence/indicators**	**Source of data**
Effectiveness: The impact of education at all levels…the extent to which all educational goals are achieved.		
Efficiency: The maximising of resource use.		
Equity: The contribution of education to increasing or decreasing social justice. Issues of access to education for all people regardless of gender, ethnicity, disability, sexual orientation, etc.		
Responsiveness: The recognition of individuality and response to efforts to 'become oneself'. The capacity of the system to respond to individual differences.		
Relevance: The goals (content and competencies) and the means of achieving them to meet the needs of the nation, the community and the learner's life context.		
Reflexivity: The contribution to learner's personal orientation in a rapidly changing world of increasing uncertainty.		
Sustainability: The take up of responsibility for global environmental changes and the uncertainty of future generations' wellbeing.		

Adapted from Nikel and Lowe (2010:605)

Empirical data were then analysed deductively using pre-determined themes and categories based on the analytical framework as presented in Table 5.2.

According to Zhang and Wildemuth (2009:320), in directed content analysis "categories and a coding scheme can be derived from three sources: the data,

previous related studies, and theories". Moreover, coding schemes can be developed both inductively and deductively (ibid.). In the context of this study, categories and coding schemes were derived from a theory and then the data were deductively analysed.

Based on these insights, the data-analysis process merged all data sets generated in Phase 2 of the collaborative action research process; i.e. focus group discussion transcripts; participant observation; transcripts of classroom presentations by participants as well as field notes of journal entries. The data-analysis process led to the compilation of analytical memorandum 2 (cf. Appendix 5). All data sets generated in Phase 2 were integrated and subjected to deductive data analysis and interpretation through the prism of the seven analytical categories informed by the fabric model of quality in education (Appendix 5). The fabric model of quality in education provided the conceptual lens to gain insight into how ESD learning processes and outcomes through the application of geographical fieldwork as a teaching method contributes to various dimensions of quality education.

The research findings for Phase 2 of the data analysis are presented and discussed in detail in Chapter 7 (7.2). The findings are presented as qualitative descriptive narratives (Creswell, 2003).

5.9 VALIDITY AND TRUSTWORTHINESS

The researcher took steps to ensure the validity of the research findings by employing several data-collection and analysis strategies in order to validate the research findings (Creswel, 2003; Schumacher & McMillan, 2006). The validity of the study was maximised by means of triangulation which, according to Schumacher and McMillan (2006:374), entails "The cross-validation among data sources, data collection strategies, time periods, and theoretical schemes". Phase 1 of the research process utilised a single data-collection method but involving multiple data sources. Triangulating different data sources enabled the researcher to examine evidence "from the sources and using it to build a coherent justification for the themes" (Creswell, 2003:196). The researcher utilised multiple (6) sources of data for Phase 1 of the research study. That enabled him to provide a descriptive account of the application

of geographical fieldwork by classroom teachers as well as describing how Geography teachers integrate and implement ESD in their teaching practice.

Different data-collection methods and techniques were used for the collection of data during Phase 2 of the research process, i.e. methodological triangulation (Schumacher & McMillan, 2006:374). Triangulation strengthened the validity and accuracy of the findings. In Phase 2, using more than one data-collection method as well as collecting data from a considerable number of research participants (2 teachers and 18 learners) enhanced the validity of the research results. Thus, this study used data triangulation, methodological triangulation and theory triangulation to enhance the validity of the study. Theory triangulation was used during Phase 2 in order to avoid bias; the researcher used a theory of quality education in order to interpret and provide a description of the research findings from a theoretical perspective. In designing the teaching and learning activities that were implemented during the research process, the researcher drew insights from a theoretical vantage point in order to appropriately inform the design of ESD teaching and learning activities (cf. Chapter 4).

In addition to the above, the semi-structured interviews and the focus group discussions were audio recorded in order to capture the responses of the research participants in an attempt to avoid misinterpreting the responses of the research participants. Additionally, the study makes use of what Creswel (2003:196) describes as “rich, thick description to convey the findings” when presenting the research findings. This ensured accuracy in the representation of the viewpoints of the research participants (Maxwell, 1992). In order to ensure that this research study accurately investigated the research objectives, the researcher first undertook a pilot test with the semi-structured interview guide (cf. 5.6.1).

5.10 ETHICAL IMPLICATIONS

This study made use of teachers and learners as research participants; hence it was of paramount importance to comply with the relevant research ethics guidelines. Prior to the commencement of the data-collection process, permission to conduct research was requested from the education authorities in Namibia. Cohen, Manion and Morrison (2003:53) maintain that the first point prior to the collection of research data should be obtaining formal authorisation to conduct research in the target community.

Authorisation to conduct research in schools was granted to the researcher by the Namibian Ministry of Education authorities. Permission to conduct research in Namibia was granted by the Permanent Secretary's office of the Ministry of Education (Appendix 6). The researcher was authorised by the Khomas Regional Education Department to conduct research in Windhoek schools (Appendix 7). Permission was also granted by five schools in Windhoek, Namibia to conduct research there. Prior to undertaking any data collection, ethical clearance was also obtained from the Stellenbosch University Research Ethics Committee (Human Research) (Appendix 8).

Once ethical clearance was obtained from the Stellenbosch University's Research Ethics Committee (Human Research), the researcher visited the respective schools to conduct research. Upon being granted permission by the respective school principals to conduct research in their respective schools, the researcher then requested the teachers to participate in the study. Teachers who agreed to participate in the study were required to complete a consent form (Appendix 9). They were also requested to decide if they were willing to participate in both phases of the research study or not; most of the teachers opted to participate only in Phase 1 of the study, i.e. in the small-scale qualitative survey. During Phase 2 of the research, the researcher was granted a time slot with the Grade 12 Geography learners in order to request them to take part in the study. The researcher explained the purpose of the research to the learners, including discussing with them what would be required from them should they decide to participate in the study. The learners who agreed to take part in the study were required to sign an assent form for minors (Appendix 10). They were also required to seek permission from their parents/legal guardians authorising them to participate in the study. All parents/legal guardians who allowed their children to participate in the study were required to complete a consent form for parents/legal guardians (Appendix 11). The researcher only permitted learners to participate in the study once their parents/legal guardians had granted them authorisation to take part in the study by returning a signed consent form to the researcher.

The researcher ensured that research participants were made aware of:

- Their right to participate voluntarily and the right to withdraw at any time, so that [they] are not being coerced into participation;

- The purpose of the study, [so that] they understand the nature of the research and its likely impact on them;
- The procedures of the study, so that [they] can reasonably expect what to anticipate in the research;
- The right to ask questions, obtain a copy of the results, and have their privacy respected
- The benefits of the study that will accrue to [them and to others];
- The need for signatures of both the participant and the researcher agreeing to these provisions (Creswell, 2002 cited in Creswel 2003:64-65).

These elements of the consent form were communicated to the research participants prior to their signing the consent/assent forms. The researcher assured the participants' that confidentiality and anonymity would be maintained. All information that was collected from the participants in this study will remain confidential and will not be released to anyone, unless required by law or unless permission will be granted for such information to be released by the research participant concerned.

Confidentiality and anonymity of the data obtained from each participant was and will in future be maintained by means of use of pseudonyms when referring to participants in the dissertation or in journal articles. Thus, coding was used during the data analysis and during the reporting of the results in the thesis. The real names of the participating schools were not disclosed in the thesis but rather school names were anonymised. The data (including audio recording) is kept in the researcher's private computer and on memory sticks, which are password protected. They are located in a private room which is not shared with others. The researcher is the only one with access to the computer thus ensuring that the data is safe. The data will be safely stored for a minimum period of five years. All interviews were transcribed immediately. The analysis of transcriptions made use of a coding system in order to ensure that no names of participants were revealed.

5.11 CONCLUSION

In this chapter the researcher described the research process that aided the researcher in answering the research question and addressing the research objectives. The researcher explicitly provided a detailed explanation of the research

design and methodology in terms of which the study was carried out. The data-collection procedure and methods were described, including the procedures that were employed for the purposes of data analysis and interpretation. The steps taken to ensure the validity of the research findings as well as their credibility and trustworthiness were described and elucidated. The chapter concluded by specifying the steps that the researcher took in order to adhere to the ethical norms associated with conducting qualitative research. In the following chapter the researcher presents the research findings and provides an in-depth discussion of the action research process.

6 THE ACTION RESEARCH PROCESS AND DATA PRESENTATION

6.1 INTRODUCTION

This chapter presents the findings of the collaborative action research process as recorded by the data-collection methods, tools and techniques presented in section 5.6 of Chapter 5. Section 6.2 presents data pertaining to Geography teachers' understanding and application of geographical fieldwork as a teaching method. Section 6.3 presents data on Geography teachers' conceptualisation of ESD as well as a description of how teachers integrate and implement ESD in their teaching practice. In section 6.4 data are presented on how the researcher engaged with two Geography teachers during the reflection session of the action research process. Section 6.5 discusses the action planning aspect of the action research process and explains how the researcher, together with the research participants, planned an intervention. A detailed description of how the planned intervention was implemented will be presented in section 6.6. Section 6.7 will present an analysis of the ESD learning processes and learning outcomes in the context of the intervention that was implemented during the research process.

The verbatim responses from the research participants (6 Geography teachers, i.e. Phase 1), the learners and the two teachers who participated in Phase 2 of the study are italicised. The use of codes throughout the chapter is intended to protect the confidentiality of the research participants.

6.2 PHASE 1 FINDINGS: GEOGRAPHY TEACHERS' UNDERSTANDING AND APPLICATION OF GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD

This section presents data on the views of a purposive sample of Geography teachers with regard to their understanding and application of geographical fieldwork as a teaching method. Table 6.1 provides a profile of the research participants who

participated in a small-scale qualitative survey, i.e. Phase 1 of the study. All teachers that are profiled in table 6.1 were senior secondary school Geography teachers during the time that the research study was carried out.

Table 6.1: Profile of research participants

Teacher Code	**Gender**	**Teaching Status**	**Geography Teaching Experience**
SSIT1	Female	Qualified Teacher with a Bachelor of Education degree	17 years
SSIT2	Female	Qualified Teacher with a Bachelor of Education degree	28 years
SSIT3	Female	Qualified Teacher with a Bachelor of Education degree	17 years
SSIT4	Male	Qualified Teacher with a Bachelor of Education degree	13 years
SSIT5	Male	Qualified Teacher with a Bachelor of Education degree	11 years
SSIT6	Female	Qualified Teacher with a Bachelor of Education degree	4 years

6.2.1 A description of Geography teachers' understanding and application of geographical fieldwork as a teaching method

Teachers were interviewed in order to ascertain their views, perceptions and experiences in applying fieldwork as a teaching method in their Geography classrooms. The first question explored Geography teachers' understanding of fieldwork as a teaching method in Geography. The responses provided by all 6

teachers indicate that they have a clear understanding of fieldwork as a teaching method in Geography (cf. Appendix 4: Analytical memorandum 1). One of the teachers described her understanding of geographical fieldwork as a teaching method as:

> *Geographical fieldwork, my understanding is when you physically go out in the field there to do research like we are doing for alternative to coursework… and…. geographical fieldwork is, if you take your learners out to do pedestrian counting, traffic counting, so that is to take them physically out in the field and do the research. To take them to the river, the beach physically out there to make their own survey to be part of their own survey. To come to their conclusion of their own survey after they have experience it themselves by using the instruments in the field. (SSIT2)*

Another teacher explained that geographical fieldwork as a teaching method in Geography entails the following:

> *Geographical fieldwork for me would mean of course as a subject Geography gets taught in class but there are/[is a] part of content which is taught in class which basically requires them [learners] to be out there in nature so that they carry out investigations and work with investigation, collect information basically and then analyse information that they get, make conclusions and recommendations if need be. (SSIT4)*

A detailed meaning of geographical fieldwork as a teaching method was provided by another teacher who described it as follow:

> *My understanding of geographical fieldwork, we are talking about the Paper 3, which is called alternative to coursework. In order to prepare thoroughly for such a paper, we need to undertake what we call geographical research or inquiry-based type of studies, where you need to get into the field and gather data after gathering the data, analysing it. You do presentation, data analysis and then you conclude and then during that you have now to refer back to the purpose of why you went into the field. What is it that we're trying to get at the hypothesis and all that, so that's geographical inquiry, i.e. doing something that is out of the theoretical realm of education, doing it in a practical way. That is geographical fieldwork. But then it encompasses a lot of topics in itself – there*

is human Geography part of Geography, there is a physical part of Geography so either way that is geographical fieldwork. (SSIT5)

Based on the responses provided by teachers, it is evident that the teachers who participated in the small-scale qualitative survey all have an understanding of geographical fieldwork as a teaching method in Geography.

6.2.2 Geographical fieldwork learning activities that teachers engage learners

Question 7 required teachers to describe how they implement/apply the geographical fieldwork teaching method in their classroom practice as well as how they involve learners during instruction. Teachers stated different topics and activities whereby they engage their learners while utilising fieldwork as a teaching method in their Geography lessons. Teachers apply the fieldwork teaching method to teach Geography topics and themes such as agriculture, beach studies, industrialisation, population, river studies, settlement studies, shopping surveys, tourism, traffic and pedestrian counts, urban land uses, weather studies and climatology (SSIT1-SSIT6). The teachers provided a description of a number of geographical fieldwork learning activities whereby they engage their learners. They include:

- *I will take them out say to a shopping mall where they can do the questionnaire part, to ask questions to shoppers visiting the mall.* (SSIT2)
- *They [learners] are going to be classified in groups to ask shoppers that come to that shop certain questions that we set up before we undertake this fieldwork exercise.* (SSIT5)
- *Weather is very easy, you can take them [learners] to the meteorological station so that at least they can just see the instruments, you can't have access to the instruments, but you see a normal thermometer everybody knows, because they do it in Physical Science, so rain gauge maybe those type of things so you do take them outside.* (SSIT1)
- *Last year we took them to the weather bureau, where they could go see the instruments itself, i.e. how it works.* (SSIT3)
- *We have a topic on settlement studies, so we do a bit of research on the quality of environment, observations.* (SSIT6)
- *You know normally we have no water, say, if I do river studies, I have no river but I normally would take them [i.e. learners] to a river just to see that we*

> *would do maybe pebble studies or we would do slope profiles, river profiles those type of things.* (SSIT1)

The responses from the teachers indicate that teachers do engage their leaners in a number of learning activities during fieldwork lessons. It is also evident that teachers implement fieldwork learning activities by drawing topics from both human Geography topics/themes as well as from the physical Geography topic/themes of the syllabus. Another aspect of the interview was that it asked teachers to provide a description of follow-up classroom activities whereby they engage learners after fieldwork activities. All teachers revealed a number of similar follow-up classroom activities to engage learners after fieldwork activities outside of their classrooms. The classroom follow-up activities to engage learners include allowing learners to process the information that they have collected in the field. The follow-up classroom activities also provide opportunities for teachers to assess their learners, i.e. in terms of finding out if their learners are able to recall what they have learned in the field. One teacher commented: *"You definitely have to test them what they have learned out in the field"* (SSIT3). Another teacher broadly explained the purpose of the follow-up activities:

> *You know the research itself is broad. So, the part of the field literally is for data collection. So, when we're in the field, we literally collect data and then when you get back into class the follow-up activities will be data presentation, where they have to present this data in the form of graphs, they can be pie charts, it can be line graph, bar graph, depending on what exactly you were studying , it can be histograms, any type of chart that people can be able to use and then that will be able to make people to understand the data that has been presented and then from there data presentation is when you know what the analysis. Now we analyse what we see on these graphs to make meaning and to link it to the hypothesis to link it to the end to see if what you've collected really links with what our main purpose of why we went into the field and then eventually we write our conclusions.* (SSIT5)

6.2.3 Factors constraining/enabling the application of geographical fieldwork as a teaching method at the classroom level

Another part of the interview examined factors constraining or enabling the application of geographical fieldwork as a teaching method by teachers. The responses from the teachers demonstrate that teachers experience more limitations than enabling factors in applying geographical fieldwork as a teaching method in their classroom practice. Limitations include a lack of instruments and equipment for conducting fieldwork learning activities that require measurements as well as a lack of transportation in some schools. Other limitations include a lack of fieldwork teaching and learning resource materials as well as the absence of geographical features (e.g. rivers and coast lines) in the towns where the schools are located. With regard to the limitations resulting from of a lack of instruments as well as pertaining to the absence of geographical features, one teacher shared her experiences as follow:

> *Measuring instruments is the first one, we don't have the instruments, we can't afford the instruments, nobody wants to donate the instruments. Then normally like I gave an example with river studies, you don't have a river with water, you see. It is [also] very difficult for me to do beach studies, unless I go to Swakopmund [i.e. a coastal town in Namibia]. So, the instruments, [and] the geographical site[s] are the main factors.* (SSIT1)

The response from another teacher further illustrates the challenges presented by the constraints of a lack of transport as well as a lack of instruments in some schools. The teacher mentioned that:

> *Number one! Insufficient equipment, as I said, like when it comes to river studies, we need equipment such as flow meters. We need the equipment such as quadrants. We need a measuring tape. Such materials are not easy to find. Most of them are very expensive for our schools to really get them. A second challenge is transport because I have a very large group. I have more or less around 120 learners doing Geography. You really need more in terms of transport and equipment and planning. It is a challenge. What we do now to overcome such a [challenge] at times we collaborate with other schools, then we go to the sites together and share the equipment that we have. That's the only way we are doing it now because there's just no other way.* (SSIT6)

As indicated previously, another factor constraining the application of geographical fieldwork as a teaching identified by one teacher is that of limited teaching and learning support materials for fieldwork activities. The teacher explained that:

> *It is very difficult to get these materials, the textbook that is prescribed just contains a skeleton, not really something that is extensive. So, you use that one as a point of departure but for you to be able to get into details you really need to do research. That is where you integrate the usage of the Internet to go through there, to obtain more information and then. Besides [the] internet, you can use any other secondary sources, it can be journals, it can be newspapers, it can be articles, anything that is of importance, of value that is going to aid you in the topic that you are dealing with, so you need to go an extra mile as far as this is concerned because a textbook itself, does not offer much.* (SSIT5)

6.3 GEOGRAPHY TEACHERS' UNDERSTANDING, CONCEPTUALISATION, INTERGRATION AND IMPLEMENTATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Another objective of the research study is to find out and document Geography teachers' understanding, conceptualisation and implementation of ESD in relation to Geography. The research findings are presented in the following sections.

6.3.1 Geography teachers' understanding and conceptualisation of Education for Sustainable Development (ESD)

Asked to comment on their understanding of the concept of education for sustainable development (ESD), the respondents linked ESD to the concepts of sustainability and/or sustainable development. In describing the meaning of ESD, one teacher states:

> *In my view, I would say education for sustainable development is basically, training and teaching of the children in view of the fact that there should be continuity. That is, in the world in general so that kids are taught and the manner in which these kids are taught, whatever they are taught helps them to continue life as usual. That is in line with Geography, it should be sustainable use of the natural resources, that is. So, that is where the aspect of continuity is with us*

> *because of continuing. The use of what is available sparingly, resources to be specific. Which brings to surface the aspect of continuity there, I think that is what I understand.* (SSIT4)

The following description of ESD by one of the respondents reveals another linkage of ESD to that of sustainability:

> *We derive it from the term, in my own understanding … sustainability, something that needs to be preserved for the future. When we talk about education for sustainable development, maybe it is the education that is aimed at sustaining the future in terms of in what way the country has to develop, in my own little understanding of the concept itself.* (SSIT5)

Similarly, one teacher further explains: *"Education for sustainable development in my belief is to prepare your future… or the learners and in the future to sustain what we have to protect i.e. the environment"* (SSIT2). Based on the responses provided by the teachers, it is evident that they associate the concept of ESD to those of sustainable development and sustainability.

6.3.2 How teachers integrate and implement ESD in their teaching practice

In trying to establish how Geography teachers integrate and implement ESD in their teaching practice two questions were posed (Questions 3 and 4 (Appendix 1A)). In trying to understand whether or not Geography teachers integrate ESD into their teaching practice, Question 3 (Appendix 1A) required respondents to describe ways in which they link ESD to the syllabus topics and themes. Question 4 further probed teachers to describe the type of ESD learning activities they engage their learners with during lessons.

All 6 respondents agreed that they integrate ESD into their teaching practice and they use different topics in the syllabus to integrate ESD and those topics are usually drawn from both human and physical Geography. The topics they use to integrate ESD include economic Geography; HIV/AIDS; agriculture; ecology; population; energy; water and natural resources management. In explaining how ESD is being integrated into Geography at a classroom level, one teacher shared her experience:

> *Sustainable development in any case is incorporated in your economic [Geography] sections and in your human [Geography] sections basically. So,*

> *you need to implement it, because population is about sustainable development, HIV is about sustainability, you know those types of topics, so you do incorporate it through your lessons, because the lessons require the term sustainability to be explained. That's where you have the more economically developed countries, development must be explained as well and education plays a very important part because through education you can obtain development, i.e. sustainable development. So, its normally through your lessons, your topics that you do incorporate sustainable development.* (SSIT1)

The following comment further explained how ESD is being integrated into the Geography lessons.

> *As I have alluded to earlier, specifically when we are dealing with Geography the word itself sustainable appears in few topics or chapters, most importantly one finds such a word as energy. When we talk about the sources of energy that we use, renewable and non-renewable sources. And then if we talk about sustainability itself again, we still go back to renewable sources again. Even though that they can be replenished by natural phenomenon, they can still also be used in such a manner that we preserve them for the future. In the syllabus, you can be able to link this [sustainable development] to energy, you can be able to link this to water resources. So, normally most of the time it's the human part of Geography where you understand the word sustainability or sustainable development in a way.* (SSIT5)

With regard to Question 4, which required respondents to describe ESD learning activities to engage learners in their classes, none of the 6 teachers elaborated in detail on the ESD learning activities whereby they engaged their learners. Rather, teachers only explained and gave examples about how they teach/transfer information about sustainable development to their learners. Some examples of how the respondents teach are illustrated below:

- *I would incorporate video clips, mostly as a teacher you must explain it so you bring in video clips which you download from YouTube to explain what sustainable development is*. (SSIT1)

- [I] *just like to follow the syllabus and to teach them the terms under sustainable development but not specific activities that they must do.* (SSIT2)
- *Of course, Geography has a part of farming agriculture, you sit there and you are going to speak to kids about how you can improve crop production for instance. It is needed [because] growing populations of the world need to be fed, and so on*. (SSIT4)

6.3.3 Challenges experienced by teachers to integrate and implement ESD in the teaching of Geography

In trying to understand the challenges experienced by the teachers to integrate and implement ESD in their Geography lessons, Question 5 on the interview guide (Appendix 1A) required the 6 teachers to comment on the challenges they encounter when planning or implementing ESD in their teaching. Also, the question required the participants to make suggestions on how those challenges can be overcome.

Three respondents acknowledged that they experience challenges in integrating and implementing ESD in their teaching of Geography. For instance, one teacher felt that:

> *…there are not many opportunities where the kids really experience the hands-on practical part of sustainable development and getting into it. That is a huge big challenge, so the practical part they don't really have access to it. I can give them the notes about sustainable development, they can understand it but when it comes to practice, we don't have that in the schools and that kind of hampers their broad understanding and as geographers to implement it after they leave school.* (SSIT1)

Another teacher explained a challenge posed by a lack of relevant ESD teaching-learning materials; the teacher mentioned that *"Just on the part of the activities, like I said, I think the materials sometimes hinder the proper imparting of knowledge into learners*" (SSIT4). Another teacher observed the following implementation challenge:

> *In terms of the way we are brought up, we have a lot of diversity, cultural diversity here. At times our cultural backgrounds and diversity conflicts with what is in the book and what is the reality, especially when it comes to cutting down trees for instance … So, at times we really have challenges making*

learners understand i.e. taking that across to our learners, that we need to take care of the environment. (SSIT6)

6.4 REFLECTION ON PHASE 1 FINDINGS: ANALYSIS OF TEACHERS' PRACTICES

This section deals with the 'reflection' element of the collaborative action research process. The small-scale qualitative survey investigated teachers' understanding and application of geographical fieldwork teaching method in their classroom practice. Geography teachers' understanding, conceptualisation as well as their integration and implementation of ESD in relation to their classroom practices were also explored. Using semi-structured interview responses from the small-scale qualitative survey, the data analysis process identified aspects of teacher practices that needed to be improved in order to implement learner-centred teaching practices effectively. The analysis of semi-structured interview data identified aspects of good teaching practices in addition to identifying some existing policy-practice gaps in the contexts of the application of geographical fieldwork as well as the integration and implementing of ESD by Geography teachers. Data analysis and interpretation of semi-structured interviews formed the basis upon which a plan of action was developed for the purposes of bridging the policy-practice gap with regards to the application of geographical fieldwork as well as the integration and implementation of ESD in the Geography curriculum in the context of this study. In the following section the researcher reflects on the teachers' application of geographical fieldwork as teaching method, and on Geography teachers' understanding, conceptualisation and implementation of ESD.

6.4.1 Reflections on the teachers' application of geographical fieldwork as a teaching method

As indicated previously, Phase 1 of the research process engaged 6 Geography teachers who participated in a small-scale qualitative survey. Phase 2 of the research process only engaged 2 teachers from the same school who agreed to take part in the study. A reflection session was held with the 2 participating teachers on the 16 July 2018 at the two teachers' school premises. What transpired during the reflection session between the researcher and the 2 teachers was recorded in the research

journal as FNR 16. The purpose of the reflection session was to provide an opportunity for the teachers to reflect on their teaching practices based on the analysed semi-structured interview data from the survey.

Several pedagogical aspects pertaining to Geography teachers' practical application of the geographical fieldwork teaching method emerged from the data analysis process, which the researcher presented to the 2 teachers during the reflection meeting. Geography teachers' understanding and application of geographical fieldwork as a teaching method (section 6.2) highlighted some pedagogical challenges that required to be attended to prior to proceeding to Phase 2 of the study. The pedagogical aspects pertaining to Geography teachers' understanding and application of geographical fieldwork as a teaching method that needed to be addressed include:

- Teachers' understanding and application of geographical fieldwork as a teaching;
- Factors constraining/enabling the application of geographical fieldwork as a teaching method at the classroom level.

These pedagogical aspects are explained in detail in the next section.

6.4.1.1 Teachers' understanding and application of geographical fieldwork as a teaching method

It transpired from the analysis of the semi-structured interview that teachers understood and conceptualised geographical fieldwork teaching method as 'research technique' skills. The 'research techniques and map reading skills' theme is one of the four broad learning content themes of the Namibian senior secondary school Geography curriculum (cf. 2.10), which requires teachers to teach research technique skills to learners. Additionally, research technique skills are officially assessed in Paper 3 of the Grade 12 Geography school-leaving examinations. During the reflection session on Geography teachers' understanding and conceptualisation of geographical fieldwork as a teaching method, the researcher presented some extracts from the semi-structured interview responses in order to ascertain why teachers were equating geographical fieldwork with research technique skills. For example, the following extract from the semi-structured interview transcripts was presented to the teachers:

> *My understanding of geographical fieldwork, we are talking about the Paper 3, which is called alternative to coursework. In order to prepare thoroughly for*

> *such a paper, we need to undertake what we call geographical research or inquiry-based type of studies, where you need to get into the field and gather data [and] after gathering the data, analysing it.* (SSIT5)

Similarly, another teacher associated research technique skills with geographical fieldwork:

> *Geographical fieldwork, my understanding is when you physically go out in the field there to do research like we are doing for alternative to coursework… and … geographical fieldwork is, if you take your learners out to do pedestrian counting, traffic counting, so that is to take them physically out in the field and do the research. To take them to the river, the beach, physically out there to make their own survey to be part of their own survey. To come to their conclusion of their own survey after they have experience it themselves by using the instruments in the field.* (SSIT2)

In addition to associating geographical fieldwork with research technique skills, teachers' fieldwork practices appeared to be limited to a strong focus on basic geographical concepts and skills including, for example, measuring, conducting population surveys, hypothesis testing, river studies, beach studies, pedestrian and traffic counting, and conducting observations (SSIT1-SSIT6). The analysed semi-structured interview data did not provide any evidence indicating that teachers were implementing fieldwork activities to engage learners with affective learning opportunities. This finding is contrary to the views of Oost, De Vries and Van der Schee (2011) who recommend that engaging learners with affective learning in Geography fieldwork is considered integral for the purposes of promoting both a deep approach to learning Geography as well as promoting a deep geographical understanding (cf. 2.8.2).

Both teachers acknowledged the finding that they equate geographical fieldwork with research technique skills and they attributed this to the fact that geographical fieldwork is not explicitly specified in the Namibia senior secondary school Geography curriculum documents (FNR 16). For example, one teacher explained that *"the only opportunity we have in the syllabus to take learners outside the class is when we teach research techniques"* (FNR 16). Another teacher explained that:

> *the syllabus is not mentioning anything on how teachers must teach fieldwork but only gives direction of how to teach research techniques in order to prepare learners for Paper 3 examinations. So, we just prepare learners to be ready on how to answer the Paper 3 which is the alternative to coursework paper.* (FNR 16)

These findings directed the researcher to examine the Geography curriculum documents, i.e. Geography syllabus, teachers' guide and the Geography prescribed textbook. The prescribed Namibia senior secondary school Geography textbook had information on 'research technique' skills but contained no practical guidelines on how teachers could set up or prepare their learners for fieldwork learning activities (FNR 16). However, the Namibian senior secondary school Geography syllabus was accessed in an attempt to seek for some suggestions on how to conduct practical fieldwork learning activities with learners. Although the Geography syllabus contains some general and specific objectives on how to teach 'research technique' skills, the syllabus did not specify how to undertake geographical fieldwork activities (FNR 16). In fact, the syllabus did not explicitly mention fieldwork or geographical fieldwork (FNR 16). Despite this state of affair, both teachers expressed a willingness to try alternative ways of teaching fieldwork (FNR 16). This led to the researcher and the two teachers to collaboratively plan a series of lessons, including a fieldwork learning activity, which is presented in section 6.5.3.

The findings of the small-scale qualitative survey made it clear that, although teachers were implementing geographical fieldwork in their classroom practice, some practical implementation shortcomings were constraining its effective implementation as identified and illustrated above. The results of the small-scale qualitative survey were shared and communicated to the teachers who agreed to take part in Phase 2 of the research process. The two teachers acknowledged the existence of the identified shortcomings pertaining to how fieldwork was being conceptualised and applied for the purposes of teaching Geography. The semi-structured interview data obtained from a small-scale qualitative survey laid a foundation for the development of a geographical fieldwork pedagogical intervention that was implemented by the two teachers in Phase 2 of the research process (cf. 6.5.1).

6.4.1.2 Factors constraining/enabling the application of geographical fieldwork as a teaching method at the classroom level

It also transpired from the semi-structured interview responses that teachers faced some limitations that constrained them from successfully implementing geographical fieldwork as a teaching method (cf. 6.2.3). Teachers cited limitations such as a lack of equipment and measuring instruments; lack of transportation; a lack of fieldwork teaching and learning resource materials, and the absence of geographical features/landscapes in towns where their schools are located.

Based on the above insights, the researcher and the two teacher participants agreed not to include any fieldwork activity that required the use of any equipment or measuring instruments during the fieldwork learning activities in Phase 2 of the study (FNR 16). This decision was arrived at because of the lack of equipment and measuring instruments. A lack of equipment and measuring instruments was cited by teachers as one of the factors that constrained them from the application of geographical fieldwork as a teaching method (cf. 6.2.3). Therefore, all physical Geography topics in the syllabus were excluded from being incorporated into the fieldwork learning activities that were planned for implementation in Phase 2 of the study. Excluding physical Geography, curriculum topics also addressed the problem presented by a lack of geographical features constraining teachers from implementing fieldwork activities.

The challenge presented by a lack of transportation cited by some teachers as a limiting factor was overcome by the fact that the two participating teachers taught at a school that did not experience any transportation challenges. The school had a school bus that was made available by the school authorities in order to cater for the transportation needs of the learners.

The semi-structured interview data revealed that some teachers were constrained by a lack of teaching and learning resource materials. This problem was addressed by identifying some suitable geographical fieldwork teaching and learning resource materials derived from different sources (cf. 6.5.1).

6.4.2 Reflections on Geography teachers' understanding, conceptualisation and implementation of education for sustainable development (ESD)

The analysis of the semi-structured interviews presented an opportunity to gain an understanding of teachers' conceptualisation, integration and implementation of ESD in the context of the Namibian senior secondary school Geography curriculum. The analysis processes also highlighted existing policy-practice gaps and indicated how the identified policy-practice gap could be bridged with regards to the integration and implementation of ESD by teachers. In terms of ESD integration in the formal education context, UNESCO comments: "The REFLECT stage aims to establish the current situation in order to identify the starting point for ESD integration, as a process of change" (2018:26). Consistent with this was the need to implement the strengths model, which requires those who are interested in integrating ESD into a school subject to:

> … identify potential areas of the mandated curriculum in which to incorporate examples that illustrate sustainability or additional knowledge, issues, perspective, skills or values related to sustainability (UNESCO, 2012:42).

As illustrated in section 6.3.2, the semi-structured interview data indicated that all teachers who took part in the small-scale qualitative survey were integrating and implementing ESD in the Geography school curriculum. Additionally, the interview data indicated that all teachers believed that ESD and SD were part of the Geography school curriculum and that in turn compels them to teach learners about sustainable development. The following interview extract captured one teacher's understanding of how SD is integrated into Geography:

> *Sustainable development in any case is incorporated in your economic [Geography] sections and in your human [Geography] sections basically. So, you need to implement it because population is about sustainable development, HIV is about sustainability you know those types of topics so you do incorporate it through your lessons because the lessons require the term sustainability to be explained.* (SSIT1)

In addition to the above, the interview data further illustrated that education about sustainable development dominated Geography teachers' classroom practice. The teaching was mainly characterised by teachers focusing more on the transmission of

knowledge about sustainable development to their learners (cf. 6.2.3) than providing opportunities to their learners to actively explore the challenges associated with sustainable development. This pedagogical approach to ESD implementation by teachers was described in Chapter 2 (cf. 2.4.1) by Wals (2009) as an instrumental approach to ESD implementation, i.e. ESD as a means to transfer the 'appropriate' sets of knowledge, attitudes, values and behaviour. However, an instrumental pedagogical approach to ESD implementation contradicts the policy of learner-centred education adopted by the Namibia formal education system (cf. 2.6.2). This identified policy-practice gap was communicated to the teachers during the reflection session. The two participating teachers acknowledged the existence of the identified policy-practice gap and they expressed their willingness to align their teaching practices to the learner-centred policy requirements (FNR 16). This finding echoed the views of Namafe (2008:59), who acknowledged that:

> many ESD researchers in southern Africa, and possibly elsewhere, needed to develop competence in sustaining the perception that the majority of the region's population had areas of strength which merely needed to be identified and then empowered through research.

In that regard, both teachers who participated in the reflection session admitted that the Geography curriculum documents lacked specifications on how to effectively integrate and implement ESD in their Geography lessons (FNR 16). During the reflection session, both teachers and the researcher concluded that the teachers were already integrating and implementing ESD in their classroom practices (FNR 16). However, the teachers also admitted that their ESD pedagogical approach needed to be reoriented from being an instrumental approach to an emancipatory approach, which is consistent with the policy of learner-centred as prescribed by the Ministry of education in Namibia (FNR 16). An emancipatory approach to ESD implementation was explained earlier (cf. 2.4.1) (cf. Wals, 2009). Section 6.5.1 provided a detailed explanation of how ESD integration and implementation was carried out and re-oriented from an instrumental approach towards an emancipatory approach consistent with the policy of learner-centred education.

The semi-structured interview results obtained from a small-scale qualitative survey as well as the reflection session with the two teachers informed the intervention planning for Phase 2 of the research process.

6.5 ACTION PLANNING: WORKING WITH TEACHERS TO DEVELOP A PEDAGOGICAL INTERVENTION FOR THE INTEGRATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN THE NAMIBIAN SENIOR SECONDARY SCHOOL GEOGRAPHY CURRICULUM

6.5.1 Introduction

This section represents the action planning stage of the action research process, which took place on 17 July 2018, a day after the reflection session with the two teachers (cf. 6.4). What emanated from the action planning phase was also recorded in the research journal using the code (FNP 17). Berg (2004:201) makes the point that "one of the operative principles of action research is to inform and empower people to work collectively to produce some beneficial change". In terms of ESD integration into a formal education context, UNESCO (2018:32) states:

> It is important that the action plan recognizes the different levels of action that need to occur for successful ESD integration. At the individual level, each staff member can be asked to identify an action plan within the scope of their respective work.

Drawing on the theoretical framework and using semi-structured interview findings from the small-scale qualitative survey, and from teachers' reflection data, the two research participants and the researcher designed a geographical fieldwork pedagogical intervention that was responsive to the identified policy and theory practice gaps. The intervention responded to the need for integrating ESD into the Geography curriculum through a learner-centred approach to pedagogy. Ferrence (2000:12) recommends that "using the information from the data collection and review of current literature, design a plan of action that will allow you to make a change and to study that change". The purpose of the action planning process was two-fold: firstly, to bridge the identified ESD policy-practice gap, which constrained teachers from effectively integrating ESD in their classroom practices; secondly, to plan for the effective implementation of ESD through the application of geographical fieldwork as a teaching method based on the principles of a learner-centred approach to teaching. The planned geographical fieldwork pedagogical intervention was made up of four classroom lessons and one fieldwork lesson activity.

The following sections present the action planning processes that led to the design of the geographical fieldwork pedagogical intervention. The planning process led to the integration of ESD into the Namibia senior secondary school Geography curriculum as a cross-curricular theme/topic (cf. 2.6.2).

6.5.2 ESD learning content selection

In selecting ESD content for the action planning, teachers identified topics that were not yet covered in the Geography curriculum and those topics that were not derived from the physical Geography themes/topics (FNP 17). As indicated in the reflection session, physical Geography topics were excluded because they would require the use of equipment and instruments that were not accessible to the teachers.

A 'Population and settlement studies' learning content theme was selected by the research participants as an overarching theme through which to integrate ESD as a cross-curricular learning theme (FNP 17). Following this, the topic titled 'Settlement studies' was selected from the syllabus. The general objective of the topic is to provide learning opportunities for learners to be able to understand "the dynamic nature of settlements in less economically developed countries (LEDCs)" (MoE, 2009:12). The specific learning objectives of the topic are to provide learning opportunities for learners to be able to:

- Analyse and discuss problems associated with the growth of the urban areas such as congestion and suggest solutions; and
- Describe the effects of urbanisation on the environment, for example, pollution (air, water, visual and noise) (MoE, 2009:12).

As discussed in Chapter 2 (cf. 2.7); and in Chapter 4 (cf. 4.2.2), the discipline of Geography provides the knowledge base for understanding and learning about sustainable development. In view of the above and in the context of implementing the 'strengths model', UNESCO (2012:41) pointed out that:

> Many topics inherent in sustainable development (SD) are already part of the formal education curriculum, but have not been identified as such, nor have they been seen as contributing to the larger concept of sustainability.

A detailed description of the learning activities is presented in section (6.6). The following section discusses the process and outcome of the lesson planning session.

6.5.3 The process of lessons planning

As indicated earlier, the lesson planning session between the research participants and the researcher resulted in the planning of a series of four classroom lessons and one fieldwork learning activity, as illustrated in Table 6.2.

Table 5: Geographical fieldwork pedagogical intervention lesson plan

Geographical fieldwork intervention lessons planned

Lesson plan 1 and learning objectives: (19th July 2018)

- Introduction to settlement studies in developing countries with particular emphasis on informal settlements.
- Urbanisation challenges in the informal settlements
- Distributing learners into three (3) groups.
- Allocating topics to the three (3) groups i.e. 1. Municipal services in informal settlements; 2. Pollution in the informal settlement; and 3. Social services in the informal settlements.
- Homework for the learners to read about their allocated topics was planned.

Lesson plan 2 and learning objectives (20th July 2018)

- Introduction to 'research technique' skills.
- Research technique skills in the field i.e. data collection.
- A discussion on data analysis and presentation methods.

Lesson plan 3 and learning objectives (23rd July 2018)

- Preparing learners for fieldwork learning activities.
- Presenting instructions to learners for follow-up fieldwork activities.

Lesson plan 4 i.e. fieldwork learning activity (24th July 2018)

- Fieldwork investigations by learners in their respective three (3) groups.
- Interviewing residents of the informal settlements in the city of Windhoek.
- Collection of data

Lesson plan 5: Follow-up to fieldwork activities (26th July 2018)

- Group presentations of fieldwork results to the class by learners.

The overall objective of the lesson planning meeting was to work with the research participants in order to plan and develop geographical fieldwork learning activities that

integrate ESD content knowledge into the Geography lessons through a cross-curricular learner-centred approach. It was important to involve the research participants in the lesson planning process in order to ensure effective ESD integration. That was the case because in order to support effective ESD integration in this context, “it is important to ensure that plans are being developed together with the individuals and groups who will be responsible for implementing these planned activities” (UNESCO, 2018:32). The lesson planning meeting generated a total number of five lesson plans, which were coded TLP1 to TLP5.

The researcher’s role during the lesson planning session was to provide theoretical guidelines, which were then implemented/translated into classroom practice by the two teachers in their respective classrooms. Put differently, the researcher facilitated the application of the theoretical framework in order to inform the instructional design and sequencing of teaching and learning activities as well as the identification of additional teaching and learning resource materials. That was done because in order to apply the ‘strengths model’ at the local level, it is imperative for those who are involved in the ESD integration process to “Provide professional development opportunities for teachers” (UNESCO, 2012) (cf. 4.2.2). The provision of professional development opportunities for the teachers did not end during the planning session. The researcher continued to engage and interact with the research participants on a daily basis in order to support them in an attempt to successfully implement the planned lessons.

Drawing on the theoretical framework and on semi-structured interviews from the findings of the small-scale qualitative survey as well as from the literature review on effective fieldwork designs, the researcher facilitated the planning of five lessons that enabled the integration of ESD content knowledge into learner-centred fieldwork learning activities. This planned approach to teaching and learning necessitated the teachers to re-orient their ESD teaching approach from being instrumental to emancipatory, as articulated by Wals (2009) (cf. 2.4.1). This approach was a response to the identified ESD policy-practice gap (cf. 6.4.2).

Additionally, the researcher was able to operationalise the theoretical guidelines for effective fieldwork designs and implementation by structuring and sequencing the learning activities in the following order: (1) preparing learners for fieldwork activities;

(2) engaging learners with fieldwork learning activities; and (3) follow-up fieldwork activities. Arranging fieldwork learning activities in the above sequence made provision for effective learner-centred fieldwork activities (cf. 2.8.2).

The researcher was able to engage research participants in applying elements of socio-constructivism to plan how learners would be set up and organised in order to support and make group learning relevant to the learners (cf. 4.2.1). For example, the syllabus learning unit on the "challenges of urbanisation in informal settlements" was divided into three topics based on the syllabus learning objectives (FNP 17). The three topics were selected by the research participants to be included in the lesson plans as learning objectives, namely:

1. Municipal services in informal settlements;
2. Pollution in informal settlements;
3. The provision of social services in informal settlements.

It was then suggested that learners would be divided into the three groups indicated above in order for them to work together and explore sustainable development challenges from the perspectives of their group topics. Below is a detailed description of the planned lessons.

Lesson 1 (TLP1)

The planning session for lesson 1 was focused on the development of teaching and learning activities that required learners to develop an understanding of informal settlements in a 'less economically developed country' (LEDC) context, i.e. Namibia. Another lesson objective was to introduce learners to the challenges associated with informal settlements as a result of urbanisation.

The lesson planning session drew on a social constructivist theoretical frame to provide practical solutions for developing and implementing learner-centred classroom instructional activities (cf. 4.3). The utility of applying a socio-constructivist theoretical perspective by the researcher at this step of the research benefited the research process in the following ways:

1. It presented research participants with practical solutions to plan and to organise lessons based on a learner-centred approach to teaching;

2. It enabled both the researcher and the research participants to identify relevant teaching and learning resource materials that were to be used in the classrooms;
3. It enabled research participants to bridge the policy-practice gap in relation to the policy on learner-centred education, i.e. a policy imperative that continue to present challenges to teachers' capacities to implement learner-centred methods of instruction in Namibia (cf. 2.6.2);
4. It was a useful theoretical frame for planning, organising and implementing learner-centred activities for the learners (FNP 17).

In order to promote active learning and collaborative activity among learners (cf. 4.2.1 and 4.3), three groups per class were set up based on the three topics that were mentioned above. The planning session incorporated elements that provided opportunities for developing learners' English reading skills and understanding by including an individual learner activity homework exercise. The homework exercise was planned with the intention of providing an opportunity for learners to explore relevant information on informal settlements on their own, i.e. to enable autonomous learning in learners (FNP 17).

Lesson 2 (TLP2)

Lesson 2 was planned in order to provide an opportunity for the introduction of 'Research technique skills' to the learners. Another lesson objective was to provide learners with an opportunity to learn how to utilise 'research technique skills' for the purposes of conducting primary data collection in the field (FNP 17). The lesson was also planned in order empower learners to apply the methods of data analysis and presentation in relation to 'research technique' skills as mandated by the Geography curriculum specifications. The overarching goal of planning the lesson was to ensure that the learning activities would empower the learners with competencies to apply 'research technique skills' to data collection, data analysis and presentation (cf. 6.6.1).

Lesson 3 (TLP3)

The planning process for this lesson was based on preparing learners to apply research technique skills in order to collect data relevant to the three topics that the learners were to be assigned to (FNP 17). Thus, the planning process accommodated elements of preparing learners to apply data-collection techniques during fieldwork

investigations (6.6.1). The lesson planning session accommodated aspects pertaining to follow-up fieldwork learning activities (FNP 17).

Fieldwork learning activity

The planning for the fieldwork learning activities involved preparing the learners for the fieldwork learning investigations in terms of scheduling, transportation as well as identification of sites that were to be visited by all three classes that were taught by the research participants. The planning process made provision for the logistics that would enable the successful implementation of fieldwork investigations by the learners. It was also agreed that the researcher and the teachers would visit the identified sites a day prior to the actual fieldwork investigations in order to familiarise themselves with the places.

Lesson 4 (TLP4)

Planning for this lesson was based on providing an opportunity for the learners to present their group fieldwork investigation findings to the class based on the objectives of their topics in relation to the data they collected in the field. Thus, the planning process enabled research participants to plan how learners would make class presentations, i.e. time allocation and in what format the presentations would be conducted (FNP 17). A detailed discussion of how this lesson was implemented is presented in section 6.6.3.

The lesson planning session also led to the identification and preparation of teaching and learning resource materials that were prepared by both the researcher and the research participants. Providing an opportunity for the teachers to participate in the decision-making process for the purposes of lesson planning was essential for the successful integration and implementation of ESD in the context of the study. UNESCO suggested that teachers should not just be viewed as instruments for delivering ESD messages, but should rather:

> be centrally involved in developing the concepts, content, pedagogy, evaluation and research that will support the creation of ESD. Involvement in decision-making helps to develop a sense of ownership of the process and the outcomes (UNESCO, 2018:35).

The following section presents a description of teaching and learning activities that took place during the implementation of the planned lessons.

6.6 THE ACTION PHASE OF THE ACTION RESEARCH PROCESS: ESD LESSONS IMPLEMENTATION THROUGH THE APPLICATION OF GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD

This section describes the 'action' aspect of the integration and implementation of ESD through the application of geographical fieldwork as a teaching method. The intervention consisted of implementing the four planned lessons and the fieldwork learning activity (cf. 6.5.3). The lessons were implemented in three classes, because one research participant taught two Grade 12 Geography classes while the other research participant taught only one Geography class. However, both of the teachers presented similar lessons that were collaboratively planned during the lesson planning session. The number of learners in each of the three classes ranged between 27 and 29. This section incorporates the 'taking action' and 'observation' aspects of action research, because the two research participants implemented the lesson plans, whereas the researcher observed the lesson implementation processes. In other words, this aspect of the action research process "combines the action research stages of ACT and OBSERVE" (UNESCO, 2018:34). The researcher's role during the lesson implementation was that of a participant observer, i.e. recording his observation of teaching and learning activities. The duration of the lesson implementation lasted for five teaching days, i.e. the first lessons for each of the three classes commenced on Thursday 19 July 2018 and the last lessons were presented on Thursday 26 July 2018. No lessons were presented over the weekend, and there were no lessons on Wednesday 25 July 2018, because the learners were given time to work in their respective groups in order to analyse and present the fieldwork data that they had collected on the previous day. The researcher observed the lessons and coded his observations of each of the five lessons from FNLT 1 to FNLT 5. The teachers would also observe one another's lessons in order to learn from one another.

The need to bridge the identified gap between policy and practice required the research participants to operationalise the theoretical guidelines for effective ESD integration and effective fieldwork implementation in the classroom and in the field (cf. 2.8.2). Therefore, the four (4) lessons and the fieldwork learning activity were organised and arranged in the following order: Preparing learners for fieldwork activities (Lessons 1, 2 and 3); Engaging learners with fieldwork learning activities

(Lesson 4: data collection and fieldwork investigations); Follow-up fieldwork activities (Lesson 5: classroom presentations).

6.6.1 Preparing learners for fieldwork (Lessons 1, 2 and 3)

As indicated in section 6.5.3, the lesson objectives for Lesson 1 were to introduce learners to the topic of settlements studies in developing countries, focusing on informal settlements. The lesson focused on urbanisation challenges associated with informal settlements and the teachers presented their lessons by making use of the Geography textbook and by involving learners through questions and discussions in order to provide a broad overview of the topic (FNLT 1). Learners were divided into three groups, which were allocated different topics to focus on: 1. Municipal services in informal settlements; 2. Pollution in the informal settlements; and 3. Social services in the informal settlements. The learners were provided with a homework activity that they were requested to complete and bring back to class in their next Geography lesson (FNLT 1). The homework exercise required the learners to explore the urbanisation challenges associated with informal settlements in Namibia and in other developing countries (FNLT 1). The learners were mainly required to concentrate on answering the homework questions in relation to their respective topics (FNLT 1).

In Lesson 2 the learners moved into their respective groups and asked to share information about their homework with other team members in their respective groups (FNLT 2). The learners were purposely assigned to their groups to discuss their respective topics in order to provide them with opportunities to share their individual perspectives on the topics assigned for social interaction and to learn from one another through cooperative and collaborative learning (FNLT 2). This was done because collaborative elaboration leads to learners constructing an understanding of a topic together, which may not be possible if individual learners were on their own (Amineh & Asl, 2015). The learners were also introduced to ‘Research technique’ skills as an alternative way of collecting primary data in Geography. Additional handouts and worksheets on ‘Research technique skills’ were made available and distributed to the learners (FNLT 2). A discussion on how to utilise ‘research technique skills’ for data collection in the field was also facilitated by the teachers through scaffolding in order to support “learners to build knowledge representations and mental skills like those of experts, i.e. through the use of language, tools, and practice in a community” (cf.

Soloway *et al.*, 1996) (cf. 4.2.1). That was done in order to enhance learners' understanding of applying 'Research technique skills' for the purpose of collecting data during fieldwork investigations (FNLT 2). The teachers distributed additional handouts and information sheets on the topic of data analysis and data presentation methods to all their learners (FNLT 2). Similarly, the teachers explained the topics to their learners in order to make them understand how to analyse and present primary data in various formats (FNLT 2).

Lesson 3 began with a recap of Lesson 2, i.e. questions were posed to the learners based on the contents of the previous lesson (FNLT 3). After that the learners moved into their respective groups in order to prepare them for the fieldwork investigations that were to be conducted on the following day. In order to prepare learners for active and inquiry-based fieldwork learning activities, learners in the three respective groups were issued with questionnaires that contained questions related their topics (cf. Appendix 2C). The questionnaires were developed by the teachers and the researcher during the lesson planning session and were based on the Geography syllabus specification (FNLT 3). All three groups were provided with research objectives for their respective fieldwork investigation. Below is a description of the three topics and the associated topic objectives that learners were required to explore.

1. Municipal services in informal settlements

The learning objectives were to:

- *Find out and present data for the main sources of energy/fuel used for cooking in each informal settlement that the class will visit.*
- *Find out and present data for the most used energy source for lighting in all three (3) settlements.*
- *Find out and present the main type of sanitation facilities used in all three (3) settlements.*

2. Pollution in informal settlements

The learning objectives were to:

- *Find out the most common type of pollution in all three (3) informal settlements.*
- *Find out and present data of the main cause of air pollution in all three (3) settlements.*

- *Find out and present data showing comparison between employed and unemployed residents in each of the three (3) informal settlements.*

3. Social services in informal settlements

The learning objectives were to:

- *Find out and present data of the main medical facilities available to residents from all three (3) settlements.*
- *Find out and present data of the type of transport used by residents in all the three (3) settlements.*
- *Find out and present data of the three (3) main facilities that residents want in their settlements that are currently not available.*

Learners were instructed by the teachers on how to go about collecting data by interviewing residents in the informal settlements of the city of Windhoek. The learners were also informed that they were required to analyse and present their collected data in various formats upon completion of fieldwork investigations (FNLT 3). The learners were also informed on the procedures of how to interview the respondents and how they were also expected to conduct themselves during the fieldwork data-collection exercise (FNLT 3). The teachers explained to the learners how the field data collected by learners were to be analysed and presented (FNLT 3). The purpose of Lesson 3 was to appropriately prepare all the learners for conducting inquiry-based fieldwork investigations. These guidelines were necessary in order to ensure the effective implementation of learner-centred fieldwork (cf. Kent, Gilbertson & Hunt, 1997; Remmen & Frøyland, 2014) (cf. 2.8.2).

6.6.2 Engaging learners with fieldwork learning activities (data collection and fieldwork investigations)

The fieldwork investigations by the learners were conducted in three informal settlements that are situated approximately a 30-minute drive from the school. The three informal settlements – namely, Okahandja Park, Hakahana and Havana – are located close to one another and were considered safer than other informal settlements around the city of Windhoek. Prior to taking the learners for fieldwork investigation, the researcher and the teachers visited the informal settlements in order to familiarise themselves with the areas as well as to establish how suitable the

settlements were for school children in terms of their safety. Through consultations with the residents as well as through physical inspections it was established that the residents were safe and secure for the school children to conduct fieldwork investigations. The fieldwork was conducted during the afternoon from 14:30 and not during normal school hours.

All learners from the three classes, i.e. about 28 learners per class, participated in the fieldwork investigations. The school bus was made available by the school authorities for the purpose of transporting the learners to conduct fieldwork investigations. The two teachers' roles during fieldwork was to monitor the learners and ensure that learning was taking place and the learners were in control of their own learning. The researcher's role was that of a participant observer. During the fieldwork activities learners were instructed by their teachers to keep to their groups. The fieldwork data collection involved learners interviewing the residents of the informal settlements using the questionnaires that were provided by the teachers (FNLT 4). The fieldwork investigations were inquiry-based and involved learners taking the lead by interviewing the residents of the informal settlements (FNLT 4). The learners were actively engaged throughout the fieldwork learning exercise and they moved in groups (FNLT 4). The fieldwork learning activities were done in a way that learners from each class would all get an opportunity to interview residents in each of the three informal settlements. Some of the learners were able to take pictures while conducting fieldwork activities (FNLT 4) and they seemed to enjoy their fieldwork learning experiences.

The three groups from the three different classes were able to interview 30 residents from the three informal settlements, i.e. 10 residents from each settlement. The fieldwork activities were conducted according to plan and the learners returned to school (FNLT 4).

6.6.3 Follow-up to fieldwork activities (Lesson 5)

Soon after the fieldwork data collection activity, all learners analysed and presented the fieldwork data in the various formats and graphical representations that they were introduced to in Lesson 3. The learners were also requested to make presentations of the fieldwork findings based on the objectives of their respective topics mentioned in section 6.6.1. The learners were given time to work in their respective groups in order

to complete the data analysis and presentation and they were provided with cardboard posters to present their findings (FNLT 5).

The purpose of Lesson 5 was to provide an opportunity for the learners to make classroom presentations based on the objectives of each of their three topics in relation to the fieldwork data analysed. Each group had to select 1 or 2 group members to present their findings on behalf of all group members (FNLT 5). Ten minutes were allocated to each group for the presentations (FNLT 5). The group presentations were audio recorded by the researcher using a digital voice tracer and later transcribed (Appendix 2D). A sample of three transcripts of learners' classroom presentations was selected and coded LGWP1, LGWP2 and LGWP3 respectively. Below is a sample of three classroom presentations by the learners. The following quote is representative of what type of learning the learners engaged with during fieldwork learning activities.

> *Good morning! This is our presentation on what we have discovered as we visited the three locations i.e. Havana, Okahandja park and Hakahana. We discovered that the medical services in the three settlements is lacking, most medical services are lacking, especially in Hakahana. Plus, they have to walk long distances as you can see here on the pie chart, they have to walk long distances to go to the hospitals and clinics for medical services as you can see, they mostly walk to go and get medical services. For the Hakahana settlement, they actually also have the highest rate of a lack of medical services. Since they also struggle like the rest, they also walk long distances, it's also the same rate as the Okahandja Park settlement. So, they have to walk all the way to go to the medical services which are located in Wanaheda (i.e. a residential area in Windhoek). And then we go to Havana settlement, Havana actually has least demand for medical services, actually they have a clinic in Havana and the people normally walk and go to Wanaheda for hospitals because Wanaheda is near the Havana informal settlement. The main facilities wanted by people in the three settlements that we have visited is electricity because most of them find it hard because they don't have electricity at home. They use candles which sometimes becomes dangerous it can also burn their Shacks. Many of them [the residents] don't have electricity and use gas, paraffin and those things which are also pretty dangerous for their houses. And then we go for Police stations, they said Police stations are really far from where they live except for*

> *Havana settlement. People in Havana use the Ombili [i.e. a residential area near Havana] police station because it is near Havana. Many of the people especially in Hakahana and Okahandja park complained about having less shops in the settlements. In Havana they did not complain much about the shops because there is Wanaheda and Ombili nearby and they use shops there.* (LGWP1)

The following extracts from the classroom presentations typify some of the learning activities learners were engaged with during fieldwork investigations.

> *Good morning class. Our presentation is on pollution in the three informal areas we visited i.e. Havana, Hakahana and Okahandja park. Our interviews found out that the most common pollution affecting people we interviewed in all settlements is noise pollution. About 70% of the people that we interviewed said that noise pollution was common because there are many bars near their hoses which play loud music during the day and night. The other type of pollution they experience is ground pollution because of waste that is lying around their settlements. The people said that there don't have many rubbish bins to put their waste in and people through their waste anywhere. People in Havana also said that they experience air pollution coming from smells of faeces in the riverbeds and the people in Okahandja park said that the air pollution there is caused by smelling sewage water from broken pipes. Water pollution not very much experienced in all informal settlements because they said their drinking water is clean there as you can see on our graph.* (LGWP6)

Another learner from a group that investigated municipal services in the informal settlement provided the following insights into their learning activities and findings:

> *We had to do a survey on municipal services and our first objective was to present data for all the type of energy or fuel used for cooking in each settlement. The three settlements that we had were Hakahana, Havana and Okahandja park. I will start with Havana informal settlement, in Havana the type of energy sources used are mostly wood and electricity. A large percentage of these people in the Havana informal settlement use mostly wood which we feel is also a disadvantage because the more they are using wood the more it leads to deforestation. The people also use illegal electricity i.e. so they use extension*

cords to get electricity from one place to another, which is illegal and dangerous. And the second settlement was Okahandja Park. Again, the same just as Havana, a large percentage of the people in Okahandja Park use wood and 40% uses electricity which is also illegal. And then the last settlement is Hakahana. Majority of the people in Hakahana use gas. Now the disadvantage of using gas is that it may lead to fires and explosions. An advantage of using gas for them I feel is because of their conditions, is that it is in bulk supply meaning they can get gas in large quantities. And majority of these people are not employed so this would be the easiest solution to them. Our second objective was to present data for the most energy used for each settlement. Again, we looked at all three settlements which was Havana, Hakahana and Okahandja Park. In Havana I would say 1% of the people use electricity and in Hakahana almost 70% of these people use candles. Candles are cheap for these people to buy so they can afford to use candles and there are also no electric lines that side so candles are their option. In Okahandja park they also mostly use candles. Our last objective was to find out and present data for the main type of toilet facility used. Again, we looked at all 3 settlements and we found out that in Havana the people mostly use public toilets. I remember when we conducted this whole survey, we interviewed someone and we did see that there were only 2 public toilets in this area this is very unhygienic, and health wise, it's not good for these people because using one toilet or only having 2 public toilets in such a huge area with so many people is unhygienic. (LGWP3)

The statements above show how learners were engaged with learning activities and how actively engaged they were during the fieldwork investigations. The classroom presentations were interactive and required learners to articulate what they learned during the fieldwork investigations (FNLT 5). Learners were motivated to participate because the presenters were asked questions as soon as they completed their presentations in front of the class. However, in some minor instances some presenters were interrupted slightly by other learners in the audience who asked questions without waiting for the presenters to complete with the presentation (FNLT 5).

6.7 GEOGRAPHICAL FIELDWORK LEARNING PROCESSES AND OUTCOMES FROM THE PERSPECTIVE OF TEACHERS AND LEARNERS

This section presents an analysis of geographical fieldwork learning processes and learning outcomes by examining teachers' and learners' views, perceptions and experiences. The analysis is based on data generated from the focus group discussions with the two teachers who implemented the geographical fieldwork pedagogical intervention. The focus group discussions were facilitated by the researcher and took place on 30 July 2018, i.e. after the follow-up fieldwork presentations by the learners. The researcher prepared a set of questions that guided the focus group discussion session with the two teachers (cf. Appendix 2A). The responses from the two teachers were transcribed and coded using the codes FGT1 and FGT2.

This aspect of the action research process represents the evaluation stage which required the researcher to "assess the effects of the intervention to determine if improvement has occurred" (Ferrence, 2000:12). In the context of this study, the purpose of the focus group discussions was to ascertain the impact of the implementation of ESD through the application of geographical fieldwork on the learners' learning processes and learning outcomes in the classroom and the field.

6.7.1 The impact of the implementation of ESD through the application of geographical fieldwork as a teaching method on the learning processes and learning outcomes of learners

Eight themes emerged from the focus group discussions with the teachers. They include facilitation of the attainment of learning goals and objectives; promotion of equal learning opportunities; contribution to addressing inequality; facilitation of the understanding of the complexities associated with sustainable development; promotion of learner-centred education and peer teaching and learning opportunities; addressing relevant learning needs; contribution to quality teaching and learning; and good teaching experience and supports assessment of learning outcomes

6.7.1.1 Facilitation of the attainment of learning goals and objectives

The researcher wanted to know from the teachers how their experience of applying geographical fieldwork as a mode of teaching aided in addressing the lesson goals and objectives. Both respondents believe that geographical fieldwork is an effective mode of teaching and learning in the sense that it facilitated the attainment of learning/lesson goals and objectives amongst their learners during the teaching and learning process. Both teachers mentioned how their learners demonstrated the attainment of learning goals and objectives specified in the Geography curriculum. FGT1 mentioned that:

> *The learners now know how to use a questionnaire, they know the differences in the types of questions in the questionnaire, how to approach the respondent when they are asking questions and what to expect to be answered also. In the field one could see they could use that skill i.e. to work with a questionnaire itself. Which is part of the content in the syllabi, then also the other fact is that in general they could also come back and then after using the tool [questionnaire] they could now come back and analyse the data which is part of the research progress or how the research process continues. They could analyse data, it was very interesting how they were analysing data, for example, how this group analysed and presented their data differently from the other group, but you could see the focus in one group compared to the other group and how they differed in their focus but yet one could see that they did understand what their aims were, what their objectives were in the topic given to them and how they showed it onto the posters that they made.*

The other teacher made the following points:

> *The lesson objectives were achieved; the lesson objectives relating to going out of class and collecting information using the tools that were at hand, they [learners] managed to do that and then the self-conduct, it was the respondents I think that was a success as well because we did not know much; not much problems were basically experienced and in fact, in the end, given the initial first-hand experience by learners being in the field even after the field or when they were in the field in terms of just having discussions there… you could see how much they appreciated the experience that they had in the field from the*

observations that they encountered. And secondly, it also showed that kids understood clearly because there was a systematic continuity from the data collection; analysing what was collected; even coming to presentation or making conclusions and presenting that. That itself really was of great benefit, so it was a success, yes, the objectives were met. (FGT2)

6.7.1.2 Promotion of equal learning opportunities

Another question that featured during the focus group discussion was that of establishing how the application of geographical fieldwork by the teachers provided learners with equal opportunities to lesson knowledge, skills and competencies. Both participants confirmed that learners benefited equally from the learning opportunities in a number of ways such as through collaborative group learning activities that formed part of geographical fieldwork learning activities. One teacher explained:

We totally divided the kids into groups in the field, after dividing them into groups each individual in the group had the chance to interview. So, the questionnaires were spread out such that each individual had a chance to be able to interview residents in the informal settlements but yet they were moving in groups. (FGT1)

The following clarification by the other teacher indicates how equal learning opportunities amongst the learners were achieved:

And adding to that, those groups were gender mixed and both boys and girls went in the field. So, the quality was there of course things were explained to them and they were all told in their groups that they had to go in the field and they collected information. So, basically no group was assisted beforehand or during the collection of this information. So, briefing was done beforehand to all the groups. All the groups were dispatched and then, they were balanced as far as gender was concerned. Therefore, in that case no group was favoured, no gender type of kids as in boys only or girls only but groups were of mixed gender. (FGT2)

In elaborating on how the application of geographical fieldwork promoted inclusive learning among learners, FGT2 added:

And I think also the fact that they could individually go interview i.e. like voice themselves out in the field made them to own the whole learning and feel part of what they were doing in the field; and that, I think made more stronger responses and critical thinking in each of them, no one was left out from the learners that were on the field.

6.7.1.3 Contributes to addressing inequality

The teachers were asked to comment on how the application of the geographical fieldwork teaching method has the potential to empower learners with appropriate knowledge and skills needed to contribute towards addressing any economic, political and social inequalities that exist in society. Both respondents affirmed the role of the geographical fieldwork teaching method in enabling leaners to develop knowledge and understanding for contributing towards addressing the challenges of inequality through teaching and learning. A teacher described how this was realised:

All questions of the topics per questionnaire were definitely based on the social inequalities and on the economic inequalities that the people are facing. I cannot say political but it was more social and economic [inequalities]. Information about social inequalities of people living there was obtained from that. Economical information was also obtained to see the lack of what they are supposed to have [in order] to uplift their standards of living; income, yes employment was one of the questions and one could rate and compare from there how many people are really employed there. (FGT2)

Another teacher, FGT2, substantiated this:

On the economic aspect; I think kids could observe which of the services were mostly available in some parts [of the informal settlements] compared to the others…. Even the types of homes that were there, they were, majority, generally, the whole atmosphere was more of corrugated iron for both the roof and the walls. So, that gave an indication that people could not afford and they did not earn sufficient income to have permanent structures or brick-walled houses. The social inequality, I think was also observed, this was observed. Especially when learners would come back and you could hear as they were interacting trying to verbally give feedback to each other some would utter things such as "this area is much worse than what we thought was there where

we started". So, it gave an indication of them as well picking up these social inequalities i.e. some places people walk much longer distances to go to public water points and these water points are quite very few. While at some other places water points were much closer and they were a bit more compared to other places. So, all these are indications of inequality.

6.7.1.4 Facilitates the understanding of the complexities associated with sustainable development

The researcher raised the question during the focus group interview discussion of how to find out in what way teaching geographical fieldwork skills (data collection and field investigations) contributes to learners' understanding of sustainable development. The following response by a teacher reveals the benefit of teaching geographical fieldwork skills (data collection and fieldwork investigations) in enabling learners to understand the concept of sustainable development:

> *My opinion would be, teaching the learners through fieldwork allows them to get in touch with the problems and situations in the field and that makes them to start looking at what the possible solutions towards the problems can be. Learners can start thinking of solutions themselves or they start hearing about how the communities want the problems to be solved or they can seek for solutions from the government also. Fieldwork makes learners understand sustainable development problems and also improve learners to have skills and knowledge to solve sustainable development problems. Kids could pick up such things in the settlements. (FGT1)*

The other teacher (FGT2) explained how teaching geographical fieldwork facilitates the learning process of learners' understanding about the complexities associated with sustainable development in the learners' community context:

> *I think teaching fieldwork skills that is data collection and then field investigation is beneficial to the learners. As these kids go out there because sustainable development is all about conserving, protecting, restoring of the natural resources that are there so that people's lives would continue. Now, as these learners continue go out there collecting information in the field, they will be getting ideas from those people that are out there [in the field]. Through that learners will be able to learn about the experiences of the people in the field*

and they would also get ides or information from the respondents which learners themselves might not have come across. Through these investigations the kids will better understand how to better use the limited resources that are there because some of the information that one would come across might be that they are basically not going to be from the textbook. So, through investigations these kids will pick up some of this information and it will contribute to them understanding much better that "development can still continue but however it should be done in a more sustainable manner".

6.7.1.5 Promotion of learner-centred education and peer teaching and learning opportunities

Both teachers in this study indicated that the application of geographical fieldwork as a teaching method promotes learner-centred education as well as peer teaching skills and opportunities. In elaborating on that, FGT1 explained:

The learners are the ones that actually taught themselves what was happening there. The questionnaires were also very clear, straight forward and understandable to the learners. So, they could use them to get the information from the field. So, it was very much learner-centred, teachers didn't have to do anything it was all about the learners going out and gather information put it on the papers and then come back to class. So, it was a learner-centred activity that totally took place.

FGT2 added:

The only thing that teachers did here, was the theoretical part of the fieldwork. As well as facilitating and just briefing them [learners] on the general way in which fieldwork is conducted; including preparation of instruments, going out there, how they were supposed to conduct themselves and how they approach respondents. After having gathered information, how they go about analysing it i.e. no teacher sat there and analysed anything, what these kids came to do was to analyse the data and after analysing the data, conclusions were drawn. Presentations were made by learners to the fellow learners. In fact, it was totally learner-centred.

Additionally, both teachers believe that geographical fieldwork group learning activities amongst learners presented learners with peer teaching and learning opportunities. This was evident from comments made by the teachers below:

> *And in the same vein it was peer teaching that was happening as well, not just amongst themselves in their groups but through class presentations to other learners who did different topics. They could inform their peers about what they have learned based on the type of information they got from the field and also about how their feelings were, they could communicate all that to other learners.* (FGT1)

One of the teachers explained how peer teaching and learning occurred:

> *…the most important thing is, each group was basically given an opportunity to basically conduct fieldwork on a certain topic. But however, at the end, each group was given an opportunity to make a presentation on that specific topic. So, they were made to sit and make analysis of that topic and they prepared on that which worked out very well, it was well done. Then peer teaching was done as well from different topics by the different learners. So, it was most definitely a very much learner-centred way*. (FGT2)

6.7.1.6 Addresses relevant learning needs

The researcher probed the teachers on their views of how geographical fieldwork learning activities and experiences were relevant to the learners' needs. The following comment describes how geographical fieldwork learning activities and experiences were relevant in addressing the learners' learning needs in relation to the Geography curriculum as outlined in the syllabus:

> *…if we go back once again to the syllabus and what is expected of them in the different school examination papers that they are facing. They now know the starting points of fieldwork investigations; they now know and understand the concepts because they were in the field and they saw what they are learning in class. For me their learning needs were addressed because their learning was more open-ended and it was a visual thing i.e. hands-on thing it's not just a theoretical learning process that mostly takes place in a class. So, I think it was really addressing their learning needs.* (FGT1)

The other teacher explained how fieldwork activities addressed the learners' learning needs: "*The group topics were relevant to Geography as a school subject and the fieldwork activities addressed their learning needs because they need to know how to do fieldwork for exams"* (FGT2). FGT1 discussed how class activities and field experiences enhanced learners' learning needs:

> *Most of the answers after the presentations that one could listen to from the learners were things like… 'environmental changes are caused because of this type of pollution and that type of pollution in informal settlements. One could hear all that because they learned through their fieldwork experience and they have picked up all that through the lessons and field experiences altogether. For example, they can confidently tell what causes ground pollution in those settlements. So really, they learnt that and they could see it.* (FGT1)

6.7.1.7 Contributes to quality teaching and learning

It emerged from the focus group discussions that teaching fieldwork skills (data collection and field investigations) contributes to quality teaching and learning. The following views were expressed by the research participants in order to demonstrate how teaching fieldwork skills contributes to quality teaching and learning:

> *It is hands-on-teaching and learning because in the classroom you are going to deliberate on the nature of how one should go about doing fieldwork investigations. You just give the general hints of how you go about investigating i.e. you are going to talk about it and give a frame of what is supposed to be done out there [in the field]. You also talk about the development of the instruments and which instruments to use, how one instrument is better than the other and so on; and then going out in the field becomes an incorporation of theory and practice, that cements theory and practice.* (FGT2)

FGT1 stated:

> *The learners learn a lot while being out in the field because they are able to make observation themselves; they see [for] themselves, it is something that broadens their views and knowledge on things and on topics that they were not even supposed to look at. It creates new thinking or new knowledge also, they*

can either come question you as a teacher about certain things or they can make conclusions on certain things they observe in the field.

Teacher FGT1 went on to explain how field investigations contribute to quality teaching and learning:

That [field investigations] makes the quality higher because it becomes a lifelong learning thing which a learner will forever remember. It can be in any topic, it could be these topics that the learners went to do investigations about in the informal settlements; it can be a traffic count; it can be a pedestrian count as long as the learner is afforded an opportunity to use the tools that are given for that specific research and goes out into the field and then practice it out.

6.7.1.8 Good teaching experience and supports assessment of learning outcomes

In order to complete the focus group interview discussion session, the researcher asked the two participants what they had learned from the experience (i.e. the application of geographical fieldwork teaching method) and how this experience will help them in future. One teacher mentioned that using geographical fieldwork as a teaching mode was a good practical teaching experience. The teacher went on to explain:

I think it's a good experience for me as a teacher, i.e. to have learners go out in the field and do field investigations; come back and see what they do with the information they got; and see how they present it to their peers or to the teacher and then to come up with their conclusions was a wonderful experience for me as a teacher. They would start understanding the whole investigation process of fieldwork from the beginning where they have to either start with a hypothesis or research objectives or how to concluded it. For me it was a good experience which I will keep and want to maintain and sustain. (FGT1)

The other teacher explained how the process of teaching fieldwork skills improves the assessment of learning outcomes in learners. The following explanation reveals how teaching geographical fieldwork skills supports the assessment of learning outcomes:

It was a nice experience because there are three things here that are brought together. Number one you look at the theoretical part. Secondly, the practical

part which involves kids learning the theory which they go and practice in the field by going out in the field and do what they are taught in class. Therefore, that gives us a platform of assessing them to find out if they really understand what we explained to them in class. Them being in the field doing things correctly gives us an indication that what we explained to them theoretically was understood because If they do it correctly while they are in the field it is thumbs up. Then it gives you a clear mind that they understand and know what they are doing. Thirdly, once they have gone out in the field and done the research themselves by collecting data; they come back to class and analyse the data and then they present it. That forms part of assessment, but most importantly, as they are presenting this information it forms part of a peer teaching process that basically takes place. It becomes more fascinating and interesting during the time of presentation because you notice and hear how learners make corrections amongst themselves. As a teacher you observe and wait to correct them later but you also notice that if the corrections are going to be coming from the learners themselves then it shows that they know what is right and what is wrong and I think they even learn better. (FGT2)

6.7.2 The impact of the implementation of ESD through geographical fieldwork as a mode of learning on the learners' learning processes and learning outcomes

As indicated earlier, the following section presents an analysis of the findings generated from the three focus group interview sessions with the learners that participated in the geographical fieldwork learning activities in the classroom and the field. The intention of the focus group discussions was to find out the impact of geographical fieldwork learning activities on the learners' learning processes and learning outcomes in the classroom and the field based on their views, perceptions and experiences of engaging in fieldwork learning activities. The learners' views, perceptions and experiences of geographical fieldwork learning activities were generated from focus group discussions with the learners and facilitated by the researcher. The focus group discussion with the leaners was conducted after the classroom presentations by learners that followed the fieldwork. A set of questions (Appendix 3A) was prepared by the researcher to guide the focus group discussion sessions. Three focus group sessions were held with each of the three classes; 6

learners were selected from each of the three classes. In total, 18 learners participated in the focus group discussion sessions and their responses were recorded using a digital voice tracer. The responses were then transcribed and coded with codes ranging from FGDL1 to FGDL18

The data were then organised into themes based on the participants' responses. Seven main themes emerged on learners' views, perceptions and experiences of geographical fieldwork learning processes and learning outcomes in classroom and the field: enabled active participation through inquiry-based learning; addressed curriculum goals and objectives; strengthened curriculum relevance; facilitated authentic learning experiences in the local community; promoted collaborative learning; promoted anticipatory learning; and aroused learners' self-awareness.

6.7.2.1 Enabled active participation through inquiry-based learning

The initial question of the focus group discussions prompted the learners to share their views and opinions on the fieldwork group topics/issues on which they conducted the fieldwork investigations. All learners were able to recall the topics on which they based their fieldwork investigations. Most importantly, the evidence suggests that learners actively participated in fieldwork investigations through the inquiry-based learning opportunities that they engaged with. During the focus group interviews the learners mentioned that: "*We all participated in interviewing people and we also made observations*" (FGDL7-FGDL11). The learners demonstrated active participation through inquiry-based learning as illustrated by the following data from the focus group interview transcripts.

> *When people tell you about problems happening in the informal settlements you will not really believe it or take it seriously. But seeing it for yourself like in fieldwork, it makes you understand it better and if you relate to it, it even makes you understand it even better*. (FGDL9)

The following audio transcript extract also suggests that leaners were actively engaged with fieldwork investigations through inquiry-based learning:

> *We were also working on pollution in the informal settlements and we got to know how things are in those informal settlements and how the people cope with many challenges. When we interviewed them, they were telling us that they*

> *are trying so hard to survive without the government's help, they were interested in sharing their information with us because they thought that might help them in the future. It also contributed to the study of Geography to us to learn more how things are there, to learn about the pollution happening there.* (FGDL8).

6.7.2.2 Addressed curriculum goals and objectives

Another question required the learners to explain how they benefited from the fieldwork learning experience. All leaners expressed the view that the experience was positive. Learners acknowledged the benefit of fieldwork learning experiences in relation to addressing the Geography curriculum goals and objectives. The following comment highlights how geographical fieldwork learning experiences addressed curriculum goals and objectives: "*Fieldwork is part of our Paper 3 exams, so seeing that and experiencing it for myself, it will make me not forget what I have learned*" (FGDL8). Another learner highlighted the benefit of geographical fieldwork learning experiences in relation to curriculum goals and objectives:

> *I also want to add that, when we were writing summaries in class on settlement Geography, we wrote about the problems that those people are facing in those informal settlements. For me, I feel like I don't have to put much effort in studying about the problems in those settlements because I have now experienced the problems and I have seen them. So, I don't really have to pay that much attention on those summaries because I saw the same problems that we wrote about in the summaries and it is not going to be difficult for me to study for the exams.* (FGDL14)

In addition to mentioning how fieldwork addresses the Geography curriculum goals and objectives, another learner added: *"This will really help us for Paper 3 exams because we have experienced what is actually going on. We will be able to answer the questions well because we can actually relate to those places*". (FGDL16).

6.7.2.3 Strengthened curriculum relevance

Another interesting finding that emerged from the focus group discussions pertains to how geographical fieldwork learning activities and processes strengthened the relevance of the Geography school curriculum. The integration of local geographical learning content on issues such as pollution, municipal services and social services

contributed significantly to curriculum relevance. The following comments from the audio transcript indicate how local geographical learning content strengthened this relevance:

> *We investigated pollution and the types of problems caused by pollution in informal settlements. Pollution there is basically caused by people who live in informal settlements and they are different types of pollution and the people we interviewed mostly spoke about ground pollution, air pollution and noise pollution. Ground pollution is caused by littering and the disposal of dirt and air pollution was from burning of different waste. Noise pollution in those places happen because some houses that side are surrounded by bars, many bars and people are also crowded there and that provide more noise in such areas.* (FGDL1)

Additionally, the application of geographical research skills (interviewing and observation) during fieldwork investigations enabled formal education to occur outside the classroom, further strengthening the relevance of the curriculum. Below are examples of some of the comments explaining how formal learning occurred outside the classroom:

> *All of the places that we actually visited have pollution problems this is because there are no municipality services available to them there. There are no dustbins there, people just dump their rubbish wherever they feel like and when they get rotten the smell that comes out is bad which causes air pollution. Most of the people cook outside and the smoke from firewood also smells bad and causes air pollution, their houses don't have taps and they get their water from faraway places. There are also not many schools there and children have to go to schools that are far. The woman we interviewed told us that it is expensive to pay for the transport of the kids to go to school because many people are not employed in that informal settlement.* (FGDL5)

The following comment exemplifies how the integration of local geographical learning content knowledge as well as the application of geographical skills outside the classroom strengthened the relevance of the Geography school curriculum:

> *We investigated about the availability of water in the area, in the informal settlement area and most of the places there don't have taps, most of the*

> *houses there don't have taps inside the house. A lack of water and taps affects them because most households do not have men, so women have to walk to far places to fetch water which takes a long time. The available public toilets are not that healthy to use its very unsanitary, some people carry diseases which can spread.* (FGDL13)

6.7.2.4 Facilitated authentic learning experiences in the local community

Fieldwork learning activities provided learners with authentic learning opportunities that took place in a real-world context, i.e. informal settlements of a city in a developing country. Through geographical fieldwork investigations, the learners were able investigate real-life sustainable development challenges in their community context and how those problems have a direct impact on human lives. Learners were able to engage with real places and were able to practice the skills for data collection as well as work with others in order to generate meaning based on their experiences. The following two remarks by learners typify some of the authentic learning activities learners engaged with during the geographical fieldwork investigations: *"Personally, from my side, I was with two girls from Grade 12 C and we were able to interview people to find out how they live and how they experience things in the informal settlement"* (FGDL1); and "*We focused our investigation on social services in informal settlements. They [people] don't have many services in those areas"* (FGDL12).

A learner who investigated the availability of municipal services in the informal settlement during the geographical fieldwork investigations stated:

> *We focused on municipal services whereby we looked at the type of energy people use in informal settlements and if they have water or not, most houses did not really have water nearby and people have to walk a few Kilometres to get water. When we looked at the sources of energy they use, most of them use wood which contributed to air pollution and also some of the people use gas to cook their food. They do not have electricity for lighting their houses and they only use candles but then they also told us that sometimes accidents do happen with candles in some houses and that causes fires.* (FGDL9)

6.7.2.5 Promoted collaborative learning

Another important finding that emerged from the focus group discussions with learners was how learners worked together in groups during the fieldwork investigations. All learners responded that they enjoyed working in groups during the geographical fieldwork investigations. Apart from enjoying the group activities, leaners mentioned other benefits of working in groups. One learner highlighted the following benefit of working in a group: *"For me as a learner, it helped me build my teamwork skills … I think those are the skills I can use even after high school not only here in high school"* (FGDL11). Some responses with regard to working in groups included:

> *The work was much easier in a group because some of those people in those settlements could not understand English but in our group, there were people from different tribes and we could translate to each other what those people were saying. So, the work was easier.* (FGDL1)

Another learner revealed an additional value of working in a group:

> *Working in groups made people more confident because when you are working with others, they help you where you do not actually understand how to explain things to other people like when you are doing interviews. The other people in your group can come in and help you.* (FGDL7)

The value of working in a group was also exemplified by another learner as demonstrated in the following explanation:

> *Working in a team helps a lot because one person can ask a question when you are interviewing someone and another team member can record the information in order to help each other.* (FGDL12)

6.7.2.6 Promoted anticipatory learning

When learners were asked to provide an opinion on how the problems that they identified in the informal settlements could be solved or alleviated in future, they expressed different views and opinions. An interesting finding is that their responses revealed an interest in how the identified problems could be solved and/or prevented from happening in future. The learners outlined a number of different ways how the identified problems in the informal settlements could be solved or alleviated in future. One learner explained how developing the rural areas could be one of the solutions

by stating that: *"I think the government should try and develop rural areas because I think these informal settlements are caused by rural-urban migration. So, if rural areas are developed more people won't flock to cities"* (FGDL3). Another learner contributed to the discussion by stating:

> *The problems can be reduced if everyone gets educated in the informal settlements. For example, if those kids that live in informal settlements all get educated, they could get their parents out of there and maybe move somewhere closer to hospitals and have a better living place. I think it is just education that will prevent those informal settlements.* (FGDL7)

The role of education in contributing towards finding a solution to the problems in the informal settlement also featured in another learner's response as evidenced in the following focus group interview extract: *"The government should build more schools for kids to become educated and when the kids are educated then there can be a better change*" (FGDL1). Another learner mentioned: *"I think the government should educate people so that they know about the dangers that they are facing in the informal areas such as the dangers of illegal electricity connections and pollution"* (FGDL6). Another learner explained how further problems in the informal settlements could be mitigated by stating: *"I also think that there should be the provision of proper roads because if there will be fire somewhere there, I don't think that fire brigade will reach there quickly because there are no proper roads"* (FGDL6).

6.7.2.7 Aroused learners' self-awareness

Another interesting finding indicates that learners became emotionally engaged as a result of geographical fieldwork learning experiences and that experience contributed towards arousing the learners' self-awareness. When asked to discuss what will help them remember what they learned during the fieldwork investigations, the learners' responses show evidence that they were emotionally engaged during the fieldwork learning activities and experiences. For instance, one learner expressed the following:

> *I learned a lot from those people's circumstances because they are not as privileged as we are. They don't have access to things we have, for instance we take taxi to school; those kids have to walk to schools or far distances to fetch water. So, the circumstances will make me remember well.* (FGDL1)

Based on the geographical fieldwork learning experiences, a learner' self-awareness was aroused as indicated in the following comment:

> *What I like about this fieldwork was that it was an eye opener, meaning that if one wants to be successful, one need education. This kind of fieldwork can be used to motivate learners because some learners need to see those kinds of settlements and experience how life is after school without education.* (FGDL9)

Another learner suggested the following:

> *From my side, when I grow up and I get children one day, I will teach them values about life and what other people are really going through. I will teach them to respect and to help other people in the community that are very needy, because what you have in life is more than enough compared to other needy people. I also learned to appreciate what I have in life because it is more than enough.* (FGDL2)

6.8 CONCLUSION

This chapter presented the research findings and provided a detailed description of the collaborative action research process that enabled the integration and implementation of ESD through the application of geographical fieldwork teaching method in the Namibia senior secondary school Geography curriculum. Phase 1 of the action research study yielded some useful information obtained from semi-structured interviews regarding Geography teachers' application of geographical fieldwork as a teaching method. The semi-structured interviews also provided information on how Geography teachers conceptualised ESD as well as how they integrated and implemented ESD in their classroom practices. Phase 1 findings provided the basis for reflection as well as for informing the action planning of an intervention for Phase 2. Phase 2 was the action phase of the action research and involved the implementation of a geographical fieldwork pedagogical intervention by two teachers.

The chapter further presented an analysis of the impact of geographical fieldwork activities on learners' learning processes and learning outcomes both in the classroom and field, based on teachers' and learners' perspectives. The next chapter interprets

the geographical fieldwork learning processes and learning outcomes in the context of quality education in order to answer the research question.

7 HOW EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) CONTRIBUTES TO QUALITY EDUCATION: THE ROLE OF GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD

7.1 INTRODUCTION

This chapter harmonises the findings of Phase 2 of the collaborative action research process in order to evaluate how the implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education within the context of the research study. An evaluation of the ESD implementation process and learning outcomes amongst learners in relation to the geographical fieldwork classroom and field activities enabled the researcher to accurately answer the research question of the study. To that end, the researcher reflected on the findings presented in Chapter 6 in the context of the literature reviewed. That was done by making use of analytical statements in order to account for the findings in light of the relevant literature. To conclude, the chapter synthesised all analytical statements in an attempt to illuminate how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributed towards quality education in relation to the three intersecting traditions of quality education: i.e. (1) the economic tradition; (2) the humanistic tradition; and (3) the 'learning as connection' tradition (cf. 3.3).

The overall aim of the study was to identify the issues pertaining to planning, integrating and implementing ESD learning activities through the application of geographical fieldwork as a teaching method in order to explore how it contributes to quality education in the Namibian senior secondary school Geography curriculum. As indicated in Chapter 1, the research study was undertaken in order to seek an answer to the following question:

How does the implementation of education for sustainable development (ESD) through the application of geographical fieldwork as a teaching method contribute to quality education in the Namibian senior secondary school Geography curriculum?

In order to pursue the research aim and to answer the research question, the research project addressed the following objectives:

- To ascertain Geography teachers' understanding and application of geographical fieldwork as a teaching method (cf. 6.2);
- To ascertain Geography teachers' understanding, conceptualisation, integration and implementation of ESD (cf. 6.3);
- Examine and analyse factors enabling or constraining the application of geographical fieldwork as a teaching method by secondary school Geography teachers (cf. 6.4.1);
- Work with teachers in order to plan, develop and integrate ESD learning activities in the Geography curriculum (cf. 6.5);
- Observe Geography teachers' implementation of ESD lessons through the application of the geographical fieldwork teaching method (cf. 6.6);
- Analyse teachers' and learners' views, perceptions and experiences on how the implementation of ESD through the application of geographical fieldwork teaching method impacted on the learners' learning processes and learning outcomes in the classroom and the field (cf. 6.7);
- Evaluate how the implementation of ESD through the application of geographical fieldwork teaching method contributes to quality education in the Namibian senior secondary school Geography curriculum in the context of this study (cf. 7.2).

In order to answer the research question, data presented in chapter 6 was triangulated and subjected to qualitative data analysis by employing a deductive mode of inference using the predetermined analytical categories in the analytical framework (cf. Appendix 5). The research findings in section 7.2 were interpreted in order to evaluate how ESD learning processes and learning outcomes through geographical fieldwork in classroom and field activities contributed to various dimensions of quality education. The findings provided the basis for answering the research question in terms of evaluating how integrating and implementing ESD through the application of geographical fieldwork as a teaching method contributed to quality education in the Namibian senior secondary school Geography curriculum.

7.2 HOW DOES THE INTEGRATION AND IMPLEMENTATION OF ESD THROUGH THE APPLICATION OF GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD CONTRIBUTE TO QUALITY EDUCATION IN THE NAMIBIAN SENIOR SECONDARY SCHOOL GEOGRAPHY CURRICULUM?

This collaborative action research project established that the implementation of ESD through the application of geographical fieldwork contributed to quality education in the Namibian senior secondary school Geography curriculum in a number of ways. The dissertation provides an in-depth analysis of the findings on how the implementation of ESD through the application of geographical fieldwork contributed to quality education in the Namibian senior secondary school Geography curriculum.

7.2.1 Geographical fieldwork as a teaching facilitated the achievement of educational goals, objectives and learning outcomes

The implementation of ESD through the application of geographical fieldwork as a teaching method facilitated the attainment of education goals, objectives and learning outcomes in a number of ways. For example, focus group discussion data indicated that the fieldwork teaching method facilitated the attainment of the learning goals and objectives (c.f. 6.7.1.1). Additionally, learners revealed that learning through geographical fieldwork addressed the Geography curriculum goals and objectives (c.f. 6.7.2.2); it also promoted collaborative learning opportunities amongst the learners (c.f. 6.7.2.5). Another interesting finding of the study is that geographical fieldwork as a teaching method aided teachers to translate the policy of learner-centred education into teaching practice (c.f. 6.7.1.5).

These findings explain the impact of the geographical fieldwork pedagogical intervention on different aspects of education at the classroom level. In other words, integrating and implementing ESD through the application of geographical fieldwork as a teaching method contributed towards the attainment of education goals, objectives and other education outcomes through teaching and learning processes. This finding corroborated the finding of Laurie *et al.* (2016), who carried out a synthesis of studies in 18 countries to establish the contributions of ESD to quality education. Similarly, their study found that the implementation of ESD in primary and secondary

school contexts helped towards the achievement of education goals and objectives, hence, contributed to quality education. Proponents of quality education (Barrett *et al.*, 2006; Nikel & Lowe, 2010) maintained that any educational intervention that supports the attainment of education goals and objectives at any level of the education system contributes to the effectiveness dimension of quality education, and thus contributes to quality education (c.f. 3.4.1). From the evidence presented above, it can be inferred that the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the effectiveness dimension of quality education.

7.2.2 The geographical fieldwork teaching method enabled the optimisation of teaching and learning resources

The implementation of ESD through the application of the geographical fieldwork as a teaching method enabled the optimisation of the usage of teaching and learning resources. This study demonstrated that implementing ESD through the application of geographical fieldwork teaching method enabled teachers to execute the planned teaching and learning activities within a specified timeframe (FNLT 5); all lessons were implemented as planned and covered all teaching and learning content as outlined in the lesson plans and in the Geography syllabus (FNLT 5). Research findings revealed that learners were able to grasp the learning content as well as apply what they had learned, because they were fully engaged in the learning process. For example, the learners were able to demonstrate an understanding and application of geographical research skills such as interviewing, observations, data analysis, data presentation as well as communicating the results of their investigations (cf. 6.6.2; 6.6.3; 6.7.1.1 and FNLT 5). The learners were able to work together and consult one another in groups as well as engage with community members in order to enhance their knowledge and learning experiences (cf. 6.7.2.4 and 6.7.2.5).

The lessons were taught as planned and they covered the teaching and learning content and objectives as outlined in the lesson plans (cf. 6.5.3 and 6.6.1). The following extract from the focus group transcript exemplifies how the teaching and learning objectives were effectively and efficiently attained:

> *The lesson objectives were achieved; the lesson objectives relating to going out of class and collecting information using the tools that were at hand, they*

> *[learners] managed to do that … it also showed that kids understood clearly because there was a systematic continuity from the data collection; analysing what was collected; even coming to presentation or making conclusions and presenting that. That itself really was of great benefit, so it was a success, yes, the objectives were met.* (FGT2)

Using fieldwork as a teaching and learning method enhanced the efficiency of the learning process, because the geographical fieldwork teaching and learning activities drew from a variety of teaching and learning resources in order to promote effective teaching and learning. Learners made good use of learning resources and processes such as questionnaires, collaborative learning opportunities in groups, and engaging with community members through interviews in order to optimise their learning and make meaning from their learning experiences. The usage of a variety of teaching and learning resources provided opportunities for learners to maximise their learning outcomes. A teacher offered insight into how the application of geographical fieldwork as a teaching method enhanced the efficiency of the teaching and learning processes in the classroom and the field settings:

> *It was a nice experience because there are three things here that are brought together. Number one you look at the theoretical part. Secondly, the practical part which involves kids learning the theory which they go and practice in the field by going out in the field and do what they are taught in class. Therefore, that gives us a platform of assessing them to find out if they really understand what we explained to them in class. Them being in the field doing things correctly gives us an indication that what we explained to them theoretically was understood because If they do it correctly while they are in the field it is thumbs up. Then it gives you a clear mind that they understand and know what they are doing. Thirdly, once they have gone out in the field and done the research themselves by collecting data; they come back to class and analyse the data and then they present it. That forms part of assessment, but most importantly, as they are presenting this information it forms part of a peer teaching process that basically takes place.* (FGT2)

The other teacher explained how the application of geographical fieldwork as a teaching method maximised the learning experiences of the learners:

> *In a geographical sense the children's minds were also focused onto their topics i.e. geographical topics that they dealt with. Perhaps I should say 99% really focused on to their topics. They really focused on the topics that were given to them and they could follow the instructions once in the field as well as when they came back to class. They could also explain how they collected and analysed the data themselves in their groups they were divided into and that they could really formulate the final products that they presented.* (FGT1)

Based on the research findings presented above, it is possible to infer that the implementation of ESD through the application of geographical fieldwork as a teaching method enabled the optimisation of the usage of teaching and learning resources. Hence, it maximised the efficiency of the teaching and learning processes as well as the learners' learning outcomes. It can be argued that the implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the efficiency of the teaching and learning processes in terms of enabling the attainment of education goals and objectives and, as a result, contributed to the quality of education. Barrett *et al.* (2006) contend that efficiency as a dimension of quality education measures the degree to which the usage of inputs helps to attain educational goals most effectively (cf. 3.4.3). In the context of this study, it can be reasoned that geographical fieldwork as a teaching method permitted the achievement of the learning goals and objectives that were specified in the lesson objectives. The learning goals and objectives were also attained within a specified timeframe and that enhanced the efficiency of the teaching and learning process, ultimately contributing to the quality of education on the efficiency dimension of quality.

7.2.3 The implementation of ESD through the application of geographical fieldwork as a teaching method contributed to curriculum relevance

As discussed in section 3.4.4, relevance is one of the seven dimensions of quality education. The research findings presented in sections 6.7.1.6; 6.7.2.2 and 6.7.2.3 provide an overview of how the implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the relevance of the education (relevant learning). Teachers revealed that fieldwork learning activities and experiences addressed the learning needs of the learners in relation to the Geography curriculum (cf. 6.7.1.6). Focus group data transcripts confirmed that fieldwork learning

activities and experiences were relevant to the educational needs of the learners. The following comment from the learners' focus group transcript highlights the relevance of fieldwork to the learners: *"Fieldwork is part of our Paper 3 exams, so seeing that and experiencing it for myself, it will make me not forget what I have learned"* (FGDL8). Geographical fieldwork investigations allowed learners to investigate Geography curriculum topics/learning content in their local communities, including pollution, municipal services and social services, which were all explored in the informal settlement community context (cf. 6.6.1). This finding is consistent with that of Laurie *et al.* (2016), who carried out a synthesis of studies in 18 countries to identify contributions of ESD to quality education. Their findings also reported that ESD provided learners with relevant learning opportunities by enhancing the relevance of the learning content and it gave more meaning to the school curriculum that was well adapted to local themes and priorities (cf. 3.5).

Similarly, the implementation of ESD through the application of geographical fieldwork as a teaching method allowed local community issues to be integrated and discussed in the classroom (cf. 6.6.3). That enhanced the relevance of the education for the learners, because learners were able to practise and apply a variety of geographical and inquiry skills in order to make meaning of their learning experiences (cf. 2.8.2). This finding confirmed an assertion by Lotz-Sisitka and Lupele (2017) who explained that ESD learning processes such as the inclusion of ESD topics in localised curricula and place-based educational activities (such as geographical fieldwork in this case) help to make education relevant (cf. 3.5). Fieldwork experiences outside the classroom gave rise to PBE, which facilitated ESD learning processes, hence promoted curriculum relevance by providing learners with learning opportunities for integrating local environmental knowledge with the learning content of the school curricula (cf. Ontong & Le Grange, 2014) (cf. 3.3.3). Consequently, PBE enabled 'learning as connection' to occur, which enhanced relevant learning experiences for the learners.

Improving the relevance of education is viewed as an essential component to improving the quality of education. According to Nikel and Lowe (2010:597), "the relevance of an education system or educational experience is the extent to which it addresses user needs". The evidence presented in this study suggested that the implementation of ESD through the application of geographical fieldwork as a teaching method improved the relevance of the Geography curriculum (i.e. through a learner-

centred pedagogy and through locally relevant learning content), and as a consequence of that contributed to quality education in the Namibian senior secondary school Geography curriculum.

7.2.4 The geographical fieldwork teaching method promoted authentic learning amongst the learners in their local community context.

The application of geographical fieldwork as a teaching method promoted authentic learning, which facilitated learners' exploration and understanding of the complexities associated with sustainable development in their local community context. The findings presented in sections 6.7.1.4 and 6.7.2.4 indicated the value of geographical fieldwork as a pedagogic device in promoting authentic learning as well as enabling learners to explore and develop an understanding of the complexities associated with sustainable development in their local community context. As a teaching and learning method, geographical fieldwork can be labelled a 'Progressive Pedagogy' as described by Ofei-manu and Didham (2014) (cf. 2.4.1). Such pedagogies promote the active participation of learners by enabling them (learners) to construct their own meanings in relation to their learning experiences (cf. 2.4.1). Through geographical fieldwork investigations, the learners were able to explore and develop an understanding of the Geography curriculum topics pertaining to sustainable development (i.e. municipal services, pollution and social services) in their local community context (cf. ESD learning content) (cf. 2.4.2). Fieldwork investigations through data collection enabled the active participation of learners in the learning process and presented them with authentic learning opportunities in the informal settlements (cf. 6.7.2.1 and 6.7.2.4). Within a socio-constructivist frame, authentic learning opportunities and local environments enable learners to explore real-world problems to enhance their interests and to develop profound knowledge and skills through active participation (cf. Table 4.1; section 4.3) (Bonk & Cunningham, 1998).Thus, authentic learning activities and experiences enabled the learners to explore sustainable development challenges in the real-world informal settlement context through active participation.

For example, data from the focus group transcripts showed evidence that fieldwork learning activities and experiences contributed towards enabling the learners to

understand sustainable development and its associated challenges (cf. 6.7.1.4). One teacher noted the following:

> *Teaching the learners through fieldwork allows them to get in touch with the problems and situations in the field and that makes them to start looking at what the possible solutions towards the problems can be. Learners can start thinking of solutions themselves or they start hearing about how the communities want the problems to be solved or they can seek for solutions from the government also. Fieldwork makes learners understand sustainable development problems and also improve learners to have skills and knowledge to solve sustainable development problems. Kids could pick up such things in the settlements.* (FGT1)

The other teacher provided an explanation of how the application of geographical fieldwork promote learners' understanding of sustainable development:

> *I think teaching fieldwork skills that is data collection and then field investigation is beneficial to the learners. As these kids go out there because sustainable development is all about conserving, protecting, restoring of the natural resources that are there so that people's lives would continue. Now, as these learners continue go out there collecting information in the field, they will be getting ideas from those people that are out there [in the field]. Through that learners will be able to learn about the experiences of the people in the field and they would also get ideas or information from the respondents which learners themselves might not have come across. Through these investigations the kids will better understand how to better use the limited resources that are there because some of the information that one would come across might be that they are basically not going to be from the textbook. So, through investigations these kids will pick up some of this information and it will contribute to them understanding much better that "development can still continue but however it should be done in a more sustainable manner".* (FGT2)

From an ESD perspective within a geographical fieldwork frame of reference, Casinader and Kidman (2018:11) specified that:

> Geography in the field is concerned with the entirety of all that exists in a place. Its data gathering, although planned, is capable of being modified in order to respond to what is found

> to exist in a place and is not limited by a bounded reliance on what is perceived or expected to exist. It is able to combine the objectivity of a scientific data investigation with a reflexive engagement by the student in the process of studying what is sustainable and what is not. In consequence, sustainability education within a geographical frame investigates the issue as one that is not separate from the lives of human beings in a place; instead, it reinforces the mutual interdependence on which the two concepts coexist, both as discipline and priority.

The findings of this study regarding the contribution of geographical fieldwork pedagogy in promoting learners' understanding of sustainable development validated the contribution of the discipline of Geography towards the delivery of ESD and towards promoting an understanding of sustainable development (cf. 2.7). Fien (2001:24) pointed out that the role of pedagogy within an ESD context is that of enabling learners "to explore questions, issues and problems of sustainability, especially in contexts relevant to them and their communities; this involves student-centred and interactive enquiry-based approaches to teaching and learning". Providing active learning opportunities for learners to develop their knowledge and understanding of sustainable development through teaching and learning enhances quality education on the dimension of sustainability (cf. 3.4.7). This supports the finding of Kadji-Beltran *et al*. (2016), who explored the common ground between ESD and quality education in a Cyprian primary school context (cf. 3.5). Their study also reported that ESD and quality education have common dimensions (i.e. environmental, social, political and cultural) and are underpinned by principles that support sustainable development (cf. 3.5). It should also be noted that the findings presented here re-established that a learner-centred teaching approach to fieldwork involving the active participation of learners enabled the implementation of an emancipatory approach to ESD in a classroom context (cf. 2.4.1). This is indicative of the view that an emancipatory approach to ESD implementation contributes towards the learners' understanding of the challenges associated with sustainable development and thus contributed to quality education on the sustainability dimension of quality education.

7.2.5 The geographical fieldwork teaching method fostered the development of key sustainability competencies

The application of geographical fieldwork as a teaching method facilitated active learning amongst learners and thus fostered the development of key sustainability

competencies. The application of geographical fieldwork as a teaching method necessitated a change in the learning environment by enabling learners to explore sustainable development issues and challenges in a local community context (cf. 7.2.4). As discussed earlier (cf. 6.6.2 and 7.2.4) the learners were immersed in a real-world community context and undertook fieldwork investigations underpinned by active and experiential forms of learning (Hannafin, Hill & Land, 1997; Naish, Rawling & Hart, 2002; Corney & Reid, 2007) (cf. 4.3). As one of the learners said:

> *All of the places that we actually visited have pollution problems this is because there are no municipality services available to them there. There are no dustbins there, people just dump their rubbish wherever they feel like and when they get rotten the smell that comes out is bad which causes air pollution. Most of the people cook outside and the smoke from firewood also smells bad and causes air pollution, their houses don't have taps and they get their water from faraway places. There are also not many schools there and children have to go to schools that are far. The woman we interviewed told us that it is expensive to pay for the transport of the kids to go to school because many people are not employed in that informal settlement.* (FGDL5)

The focus group transcript data from teachers provided evidence of how a geographical fieldwork pedagogy benefited learners' active involvement in the learning process. For example, the following extract from the transcript suggests the value of learners' active involvement:

> *The learners learn a lot while being out in the field because they are able to make observation themselves; they see [for] themselves, it is something that broadens their views and knowledge on things and on topics that they were not even supposed to look at. It creates new thinking or new knowledge also, they can either come question you as a teacher about certain things or they can make conclusions on certain things they observe in the field.* (FGT1)

Additionally, the learners were able to collect data through interviews from community members (cf. 6.7.2.1 and 6.7.2.4), collaborated and consulted their group peers in their groups (cf. 6.7.2.5), analysed the collected data, and communicated findings through class presentations (cf. 6.6.3). The evidence gathered suggested that the geographical fieldwork learning activities promoted the attainment of the following

learning outcomes amongst the learners: the development of subject-specific content knowledge and skills related to Geography (cf. 6.7.1.1; 6.7.1.4; 6.7.2.2 and 6.7.2.4); training in acquiring transferable skills, i.e. independent learning, inquiry learning and problem-solving (cf. 6.6.3; 6.7.1.5 and 6.7.2.1) including the promotion of collaborative learning skills (cf. 6.7.2.5) (cf. 2.8.2). These findings corroborated and confirmed the findings of other scholars who found that geographical fieldwork as a teaching method is an effective teaching and learning method in Geography, because it leads to several learning outcomes in learners such as: a deeper understanding of Geography issues and topics; promotion of transferable skills and knowledge; cognitive and affective benefits as well as improving social skills in learners (Fuller *et al.*, 2006; Simasiku, 2012; Yang *et al.*, 2014) (cf. 2.8.3). Additionally, a geographical fieldwork pedagogy promotes authentic learning experiences which facilitated learners' exploration and understanding of the complexities associated with sustainability/sustainable development in their local community contexts (cf. 7.2.4).

In an ESD context, participating and gaining personal experiences through learning activities and processes such as those described earlier in this section facilitated the development of key competencies for sustainability in learners (cf. 2.4.3 and 3.6). That is because key competencies for sustainability cannot be taught by teachers, but rather they emerge as a result of experience and reflection (Rieckmann, 2017). As indicated in previous chapters, sustainability competencies include a combination of knowledge, skills and values, and should not be developed in isolation (cf. Table 3.2). The findings presented in the previous chapter (cf. 6.7.2.5; 6.7.2.6 and 6.7.2.7) gave an idea of how geographical fieldwork as a mode of learning facilitated the learning outcomes associated with the development of key sustainability competencies amongst learners (cf. Table 2.7). Those findings gave an idea of the themes that emerged from the learners' responses when they were asked about how the problems that they identified in the informal settlements could be solved or prevented in future. The learners' responses echoed the three categories of key sustainability competencies: anticipatory, collaborative; and self-awareness competencies (Rieckmann, 2017).

The implementation of ESD through the application of geographical fieldwork as a teaching method clearly facilitated active learning amongst learners, and hence fostered the development of key sustainability competencies. According to Ofei-manu

and Didham (2014), sustainability competencies develop in learners when they are presented with learning opportunities to engage with others (cf. 6.7.2.5 and 7.2.4) as well as engaging with one's community in an authentic way (cf. 7.2.4) (cf. Table 3.2). Developing key sustainability competencies in learners through teaching and learning improves quality education on the dimension of reflexivity. As Nikel and Lowe (2010:598) pointed out, "the central concern of reflexivity as a dimension of quality education is that of the contributions of education to learners' personal orientation in a rapidly changing world of increasing uncertainty" (cf. 3.4.6). As mentioned in the literature, developing sustainability competencies in learners contributes to the learners' personal orientation because any sustainability competency "articulates the qualities/attributes that learners need to develop to engage in sustainability issues and contribute to SD" (Ofei-manu & Didham, 2014:6). This finding is consistent with the findings of Kadji-Beltran *et al.* (2016:9), who explored the common features of ESD and quality education in a Cyprian primary school context and found that both ESD and quality education:

> provide life skills that help pupils to adapt to changes over a lifetime and which are necessary for social, economic and environmental well-being (e.g. cognitive, reflective, social/interpersonal and decision-making skills).

7.2.6 Geographical fieldwork as a mode of teaching and learning through group work fostered gender equity during the learning process

Geographical fieldwork as a teaching method and as a mode of learning facilitated the active participation of all leaners through groupwork activities and thus fostered gender equity during the learning process. There is significant evidence presented in this study indicating how geographical fieldwork as a teaching method and as a mode of learning facilitated the active participation of all learners in the classroom and the field through groupwork activities (cf. 6.7.2.1 and 7.2.5) and through that, fostered gender equity during the learning process. For example, through observations the researcher was able to ascertain how the leaners actively participated in fieldwork investigations as well as establish how they actively participated in classroom group discussions and activities whilst they were analysing the data collected from the field (FNLT 4 and FNLT 5).

Most importantly, the teachers believed that fieldwork as a method of teaching and learning through group work activities provided the learners with equal learning opportunities through their active participation in the learning process. In explaining how that was achieved, a teacher stated:

> *We totally divided the kids into groups in the field, after dividing them into groups each individual in the group had the chance to interview. So, the questionnaires were spread out such that each individual had a chance to be able to interview residents in the informal settlements but yet they were moving in groups.* FGT1

The other teacher acknowledged that:

> *Those groups were gender mixed and both boys and girls went in the field … All the groups were dispatched and then, they were balanced as far as gender was concerned. Therefore, in that case no group was favoured, no gender type of kids as in boys only or girls only but groups were of mixed gender … And I think also the fact that they could individually go interview i.e. like voice themselves out in the field made them to own the whole learning and feel part of what they were doing in the field; and that, I think made more stronger responses and critical thinking in each of them, no one was left out from the learners that were on the field.* FGT2

Evidence from focus group discussions with the learners showed similar results indicating that fieldwork investigations through groupwork promoted active participation amongst the learners (cf. 6.7.2.1) and promoted collaborative learning opportunities characterised by social interactions involving learners working together in groups (cf. 6.7.2.5). The following comment from the focus group transcript indicated how the learners participated actively in field investigations: *"We all participated in interviewing people and we also made observations"* (FGDL7-11). A learner described how participating in a group was beneficial:

> *Working in a team helps a lot because one person can ask a question when you are interviewing someone and another team member can record the information in order to help each other.* (FGDL12)

The evidence presented above demonstrated that geographical fieldwork as a teaching and learning method through groupwork learning activities facilitated the

active participation of all learners thus fostered equitable learning opportunities amongst both gender groups. As indicated above, the groupwork learning opportunities ensured that both girls and boys had equal access and learning opportunities to acquire knowledge, skills and concepts during the learning process. That was the case because fieldwork as a teaching and learning method framed within socio-constructivism ensured that all learners were able to engage in learning activities through their active participation (cf. 2.8.2 and 4.2.1).

Advocates of a social constructivist approach to pedagogy contend that when applied appropriately to teaching and learning, a social constructivist approach ensures that all learners in the classroom benefit from learning activities through active participation. They believe that through active participation, the learners are afforded an opportunity to construct their own understanding through collaboration and social interactions (cf. Kalina & Powell, 2009; Ertmer & Newby, 2013; Mutekwe *et al.*, 2013) (cf. 4.2.1).

It is argued that any education system, institution or education process (i.e. teaching/learning method) that addresses issues of equity and equitable access to education or to learning opportunities contributes to quality education on the dimension of equity (cf. Nikel & Lowe, 2010; Laurie *et al.*, 2016; Lotz-Sisitka & Lupele, 2017) (cf. 3.3.2 and 3.4.2). As pointed out by Laurie *et al.* (2016:229) equity as a dimension of quality education refers to issues of access to education for all people regardless of gender, ethnicity, disability, sexual orientation, etc. Based on the evidence gathered through this study, the application of geographical fieldwork as a teaching method through group work activities contributed to quality education on the dimension of equity through the promotion of equal learning opportunities for both boys and girls; thus, it promoted gender equity during the learning process.

7.2.7 Geographical fieldwork as a teaching method permitted teachers to employ a learner-centred pedagogy responsive to the diverse learning needs of the learners

The implementation of ESD through the application of geographical fieldwork as a teaching method empowered the teachers to employ a learner-centred pedagogical approach to teaching. That led to teaching and learning processes that were responsive to the learners' diverse learning needs. Evidence gathered in this study

suggested that geographical fieldwork as a teaching and learning method enabled the effective implementation of learner-centred education involving the learners assuming a leading role and taking responsibility for their own learning (cf. 6.7.1.5). In explaining how geographical fieldwork as a teaching method facilitated a learner-centred approach to teaching and learning, a teacher stated that:

> *The learners are the ones that actually taught themselves what was happening there. The questionnaires were also very clear, straight forward and understandable to the learners. So, they could use them to get the information from the field. So, it was very much learner-centred, teachers didn't have to do anything it was all about the learners going out and gather information put it on the papers and then come back to class. So, it was a learner-centred activity that totally took place* (FGT1)

Then the other teacher explained how the application of geographical fieldwork as a teaching method promoted a learner-centred approach to teaching and learning:

> *The only thing that teachers did here, was the theoretical part of the fieldwork. As well as facilitating and just briefing them [learners] on the general way in which fieldwork is conducted; including preparation of instruments, going out there, how they were supposed to conduct themselves and how they approach respondents. After having gathered information, how they go about analysing it i.e. no teacher sat there and analysed anything, what these kids came to do was to analyse the data and after analysing the data, conclusions were drawn. Presentations were made by learners to the fellow learners. In fact, it was totally learner-cantered.* (FGT2)

Not only did the teachers' adoption of a learner-centred pedagogical approach promote active learning amongst their leaners, but it also allowed the teaching and learning process to be responsive to the diverse learning needs of the learners. For example, focus group discussion data indicated that geographical fieldwork as a teaching and learning method, when implemented through group work, addressed the individual learners' learning needs by being accommodative and responsive to their diverse linguistic backgrounds during the learning process. The following focus group interview comment states how fieldwork as a teaching and learning method and when

implemented via group work accommodated the diverse linguistic differences of individual learners during field investigations:

> *The work was much easier in a group because some of those people in those settlements could not understand English but in our group, there were people from different tribes and we could translate to each other what those people were saying. So, the work was easier.* (FGDL1)

Another learner confirmed how participating in a group during fieldwork investigations was responsive to the learners' learning needs:

> *Working in groups made people more confident because when you are working with others, they help you where you do not actually understand how to explain things to other people like when you are doing interviews. The other people in your group can come in and help you.* (FGDL7)

The data presented above showed how the application of geographical fieldwork as a teaching method through group learning activities typified a learner-centred pedagogical approach (cf. 2.6.2 and 6.7.1.5) in addition to exemplifying how the learning processes were responsive to the diverse socio-cultural (i.e. linguistic) diversity of the learners. Proponents of a socio-constructivist approach to teaching and learning contend that social interactions and collaborative activities in group work are supportive of and responsive to the learning needs of individual learners working together in a group (Kalina & Powell, 2009; Mutekwe *et al.*, 2013) (cf. 4.2.1). For example, Mutekwe *et al.* (2013) maintained that, by drawing on their diverse individual socio-cultural experiences, learners do not only engage actively during the learning process, but their individual differences are also catered for during the learning process (cf. 4.2.1). This supported the argument advanced by Sifuna and Sawamura (2010), who acknowledged that every learner in a classroom is assumed to possess a wealth of existing knowledge, amassed from their personal background experiences, which teachers can draw from and build upon (cf. 3.3.3).

Based on the above insights, this study established that the implementation of ESD through the application of geographical fieldwork as a teaching method framed within a socio-constructivist pedagogical approach enabled teachers to implement a learner-centred pedagogy responsive to the diverse cultural (i.e. linguistic) backgrounds of individual learners. The research findings further established that the implementation

of ESD through the application of geographical fieldwork as a teaching method contributed to quality education in the Namibian senior secondary school Geography curriculum on the responsiveness dimension of quality education. It is argued that any teaching method that addresses the diverse learning needs of individual learners in an educational context, such as the case presented here, contributes to the quality of education on the responsiveness dimension of quality education (Nikel & Lowe, 2010; Laurie *et al.*, 2016) (cf. 3.4.5).

7.3 SYNTHESIS OF FINDINGS

As explained in Chapter 3, quality education can be examined from the perspectives of the three intersecting traditions of quality in education described in the international educational development literature:

1. Learning as successful performance/mastery; i.e. the economic/ efficiency/ mastery tradition of quality;
2. Learning as democratic process; i.e. the humanistic/ inclusivity/ participatory tradition of quality);
3. Learning as connection in/with communities and society (situated learning/ social learning); i.e. socio-cultural/social justice (Barrett *et al.*, 2006; Laurie *et al.*, 2016; Lotz-Sisitka & Lupele, 2017) (cf. Table 3.2).

This collaborative action research project has presented insights into how geographical fieldwork as a teaching method for integrating and implementing ESD in a classroom context framed by socio-constructivism contributed to quality education in the context of this study. Table 7.1 provides a synthesis of how the implementation of ESD through the application of geographical fieldwork as a teaching method contributed to quality education in relation to the three intersecting traditions of quality education in the context of this study.

Table 6: How the implementation of ESD through the application of geographical fieldwork contributed to the quality of education in relation to the three intersecting traditions of quality education.

Analytical statement	**Dimension of Quality Education**	**Tradition of Quality Education**

Geographical fieldwork as a teaching method facilitated the achievement of educational goals, objectives and learning outcomes.	Effectiveness	Economic
The geographical fieldwork teaching method enabled the optimisation of teaching and learning resources.	Efficiency	Economic
The implementation of ESD through the application of geographical fieldwork as a teaching method contributed to curriculum relevance.	Relevance	Humanistic
The geographical fieldwork teaching method promoted authentic learning amongst the learners in their local community context.	Sustainability	Learning as a connection
The geographical fieldwork teaching method fostered the development of key sustainability competencies.	Reflexivity	Humanistic and Learning as a connection
Geographical fieldwork as a mode of teaching and learning through group work fostered gender equity during the learning process.	Equity	Humanistic
Geographical fieldwork as a teaching method permitted teachers to employ a learner-centred pedagogy responsive to the diverse learning needs of the learners.	Responsiveness	Humanistic and Learning as a connection

Table 7.1 illustrated how the implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the dimensions of quality in education as well as highlighting how different intersecting traditions of quality education were impacted. Evidence in this study suggested that geographical fieldwork as a teaching and learning method in the Namibian senior secondary school Geography curriculum contributed significantly towards quality education, and hence contributed towards the delivery of quality education. The research findings presented in this chapter has demonstrated that geographical fieldwork as a teaching method has an impact on the teaching and learning process as well as on the learning outcomes. The research findings further demonstrated that if more attention is provided to the teaching and learning process in relation to the integration and implementation of ESD in the Geography school curriculum, the delivery of quality education can be actualised at the classroom level. As demonstrated by this study, the teaching and learning process is essential for both facilitating the achievement of

relevant learning outcomes in learners and for contributing towards the delivery of quality education.

7.4 CONCLUSION

This chapter provided an evaluation of how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the quality of education within the Namibian senior secondary school Geography curriculum. In answering the research question, the research findings were discussed through a set of analytical statements in order to establish how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method impacted on each of the seven dimensions of quality education. The study drew on the quality education analytical framework underpinned by the fabric model of quality in education (Nikel & Lowe, 2010) to provide a conceptual framework for interpreting the data in relation to the literature reviewed. The study established that the integration and implementation of ESD through the application of geographical fieldwork as a teaching method contributed to the quality of education in various ways as outlined by each of the analytical statements. The next chapter provides an assessment and summary of the research process including the lessons learned and the limitations of the study. The contributions of the research and some recommendations for future research will also be presented.

8 SUMMARY, CONTRIBUTION, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION

8.1 INTRODUCTION

This chapter provides a summary of the research findings in relation to the research question and objectives of the study. The chapter begins by providing an overview of the study and then a summary of the key findings will be presented. The contribution of the study will then be discussed, followed by recommendations based on the findings. The limitations of the study will be reflected upon and the chapter will conclude with the suggestions for further research.

8.2 OVERVIEW OF THE STUDY

The purpose of this study was to explore how the integration and implementation of ESD through the application of geographical fieldwork as a teaching method could contribute to quality education in the Namibian senior secondary school Geography curriculum. As discussed in Chapter 1, the study sought an answer to the following research question:

How does the implementation of education for sustainable development (ESD) through the application of geographical fieldwork as a teaching method contribute to quality education in the Namibian senior secondary school Geography curriculum?

The aim of the study was to identify and address the issues pertaining to planning, integrating and implementing ESD learning activities through geographical fieldwork as a teaching method in order to explore how such learning activities could contribute to the learners' qualitative learning outcomes. The study was undertaken in two phases. Phase 1 comprised an exploration into how teachers were integrating and implementing ESD through the application of geographical fieldwork teaching method in their teaching practice. Based on the teachers' responses, Phase 2 involved the researcher working with two teachers to integrate and implement ESD learning activities in the Geography curriculum. The teachers facilitated the implementation of ESD learning activities through the application of a geographical fieldwork pedagogy

in their lessons. The geographical fieldwork lessons were all observed by the researcher and were later analysed in order to evaluate how they contributed to enhancing the quality of education.

The ultimate goal of the study was to contribute towards building the capacities of teachers to effectively deliver ESD in classroom contexts, with a view to "reorient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development" (UNESCO, 2014b:14).

In order to address the research aim and to answer the research question, the following objectives directed the research process:

- To ascertain Geography teachers' understanding and application of geographical fieldwork as a teaching method;
- To ascertain Geography teachers' understanding, conceptualisation and implementation of ESD;
- Examine and analyse factors enabling or constraining the application of geographical fieldwork as a teaching method amongst senior secondary school Geography teachers;
- Work with teachers in order to plan, develop and integrate ESD learning activities into the Geography school curriculum;
- Observe Geography teachers' implementation of ESD lessons through the application of geographical fieldwork;
- Evaluate how the implementation of ESD through the application of geographical fieldwork contributes to quality education.

8.3 KEY FINDINGS OF THE STUDY

This section presents the key findings that emerged from the research process. The findings are presented according to the two phases of the research process.

8.3.1 Key findings from Phase 1 of the study

The purpose of Phase 1 of the study was twofold: firstly, to find out Geography teachers' understanding and application of geographical fieldwork as a teaching

method; secondly, to find out Geography teachers' understanding, conceptualisation, integration and implementation of ESD.

The findings revealed the following:

- It transpired from the semi-structured interview analysis that teachers equate geographical fieldwork with 'research technique' skills in the Geography syllabus. This is attributed to the fact that geographical fieldwork is not explicitly stipulated in the Geography curriculum;
- Teachers' fieldwork practices appear to be limited to a strong focus on basic geographical concepts and skills such as measuring, conducting population surveys, hypothesis testing, river studies, beach studies, pedestrian and traffic counting, and conducting observations with no evidence of engaging learners with affective learning in fieldwork;
- Teachers cited constraints such as a lack of equipment and measuring instruments, lack of transportation, a lack of fieldwork teaching and learning resource materials, and the absence or a lack of geographical features (i.e. sites/landscapes) in towns where their schools are sited as factors limiting them from effectively applying the geographical fieldwork teaching method.

The findings revealed the following with regard to the Geography teachers' understanding, conceptualisation and implementation of ESD:

- The teachers believe that the concepts of sustainable development and ESD are already incorporated into the Geography curriculum and because this is the case, the teachers are compelled to teach about the concepts;
- The findings further indicate that education about sustainable development was the dominant approach that the teachers employed to integrate and implement ESD in their teaching practice. The teaching is mainly characterised by teachers focusing on transmitting knowledge and facts to their learners about sustainable development. This pedagogical approach to ESD implementation by teachers was described as an instrumental approach to ESD implementation (Wals, 2009) (cf. 2.4.1). Such an instrumental approach to ESD implementation contradicts the learner-centred policy promoted by the education authorities in Namibia (cf. 2.6.2). This finding revealed a policy-practice gap in terms of Geography teachers' ESD conceptualisation and implementation.

A reflection session with two research participants was facilitated by the researcher in order to reflect on how the research findings of Phase 1 could inform Phase 2 of the study. A pedagogical intervention was then collaboratively planned by the researcher and the teacher participants based on the research findings of Phase 1 and informed by the theoretical framework. The purpose of the pedagogical intervention was to integrate ESD into the Namibian senior secondary school Geography curriculum. The planned intervention consisted of four Geography lessons and a geographical fieldwork investigation lesson, which were planned and implemented by the research participants during their Geography lessons. All lessons were observed by the researcher.

8.3.2 Key findings from Phase 2 of the study

The purpose of Phase 2 of the study was also twofold: firstly, to observe Geography teachers' implementation of ESD lessons through the application of geographical fieldwork as a teaching method; secondly, to evaluate how the implementation of ESD through the application of geographical fieldwork as a teaching method contributes to quality education in the Namibian senior secondary school Geography curriculum.

Research findings in Phase 2 of the study revealed that the implementation of ESD through the application of geographical fieldwork as a teaching method contributed to quality education in numerous ways as illustrated by the seven analytical statements below.

- Analytical statement 1: Geographical fieldwork as a teaching method facilitated the achievement of educational goals, objectives and learning outcomes. The geographical fieldwork pedagogy supported the attainment of the Geography curriculum goals and objectives, and contributed towards other learning outcomes amongst the learners (cf. 7.2). As illustrated in the previous chapter (cf. 7.2.1), any educational intervention that facilitates the achievement of the stated education goals and objectives of the education system contributes towards quality education in relation to the effectiveness dimension.
- Analytical statement 2: The geographical fieldwork teaching method enabled the optimisation of the teaching and learning resources. The findings of this study suggest that the teaching and learning processes were effectively and efficiently conducted. The learning content was implemented as planned within

a specified timeframe and the learners were able to master and apply the learning content. The learners were also able to demonstrate specific skills in relation to the learning outcomes and objectives. Implementing ESD learning activities through geographical fieldwork as a teaching and learning mode enhanced the efficiency and effectiveness of the lessons. Research evidence suggests that the teaching and learning processes drew on a variety of teaching and learning resources, which enhanced the efficiency and effectiveness of the lessons. This provided learning opportunities for the learners to maximise their learning outcomes, and hence improved the quality of learning. The quality of education was improved in the dimension of efficiency (cf. 7.2.2).

- Analytical statement 3: The implementation of ESD through the application of geographical as a teaching method contributed to curriculum relevance. The fieldwork learning activities and experiences addressed the learners' learning needs and allowed the local community's issues and challenges to be discussed in the classroom. Fieldwork as a mode of teaching and learning permitted learning to take place in a local environment. The quality of education was improved because improving the relevance of education contributes to quality education in relation to the relevance dimension.
- Analytical statement 4: The geographical fieldwork teaching method promoted authentic learning amongst the learners in their local community context. Developing learners' knowledge and understanding of challenges associated with sustainability/sustainable development through teaching and learning enhanced quality education in relation to the sustainability dimension. The research findings demonstrate that fieldwork as a teaching and learning method provided learners with authentic learning experiences to explore challenges associated with sustainability and sustainable development in their local community context.
- Analytical statement 5: The geographical fieldwork teaching method fostered the development of key sustainability competencies. The active learning opportunities facilitated the development of key sustainability competencies among learners. This contributed to quality education because of its impact on the dimension of reflexivity.

- Analytical statement 6: Geographical fieldwork as a mode of teaching and learning through group work fostered gender equity during the learning process. Group work and group learning activities in the field and in the classroom promoted social interactions as well as collaborative learning among learners. The social interactions and collaborative learning opportunities amongst learners promoted equitable access to learning opportunities for both the girls and the boys. This provided equal learning opportunities and access to knowledge, skills and concepts for both genders during the learning process in the classroom and during fieldwork investigations. A combination of active learning opportunities, equitable gender access to learning as well as the promotion of social interactions amongst learners contributed to quality education on the equity dimension of quality.
- Analytical statement 7: Geographical fieldwork as a teaching method permitted teachers to employ a learner-centred pedagogy responsive to the diverse learning needs of the learners. Social interactions and collaborative learning activities in group work enabled the learners to actively participate in the learning process by drawing on their linguistic and cultural diversity to engage and collaborate with others during the leaning process. As a result of active learner participation, the learners' individual learning needs were catered for during the learning process (cf. 7.2.7). Addressing the learners' individual learning needs through teaching and learning contributed to quality education in the responsiveness dimension of quality education.

Implementing ESD through the geographical fieldwork teaching/learning method contributed towards the delivery of quality education in relation to the three traditions of quality education of interest in this study. Geographical fieldwork as a teaching and learning method, if viewed from a human capital approach to quality in education, can be said to have contributed to quality education (cf. 3.3.1). That was achieved because it enabled the learners to attain learning outcomes prescribed by the Geography curriculum through teaching and learning (cf. 6.7.1.1 and 7.2.1). From a humanistic tradition of quality in education, geographical fieldwork teaching/learning method can be said to have contributed to quality education. It contributed to quality education by promoting a learner-centred approach to teaching and learning, which allowed equitable access to learning and responded to the diverse learning needs of the

learners (cf. 6.7.1.2; 7.2.6 and 7.2.7) (cf. 3.3.2). The application of geographical fieldwork as a teaching method contributed to quality education within the 'learning as connection' tradition of quality in education. It contributed to quality education because it provided learners with opportunities to learn "in/with communities and society" (Lotz-Sisitka & Lupele, 2017:12) (cf. Figure 3.2).

8.4 CONTRIBUTION OF THE STUDY

8.4.1 Introduction

The researcher wishes to discuss the contribution of the study to theory and practice in the context of ESD, quality education and geographical education under the following headings:

- A theory-based practical framework to ESD classroom interventions;
- Value of implementing ESD through learner-centred fieldwork;
- Multidimensional model of quality in education: an evaluative framework in ESD research;
- Validation of action research approach to ESD integration.

8.4.2 A theory-based practical framework to ESD classroom interventions

This study contributes to the literature on theory-based interventions to ESD integration and implementation in a formal school context. As discussed in Chapter 5, the study proposed and presented the development of a theory-based framework for informing the design of a pedagogical intervention as a means of integrating ESD into the secondary school Geography curriculum. The framework merges the socio-constructivist theory of learning and the 'strengths model' to ESD. The theoretical framework provides practical guidelines for designing an effective ESD pedagogical intervention based on a learner-centred pedagogy, a pedagogical approach consistent with the principles and practice of ESD implementation. The theoretical framework is mainly valuable in understanding effective ESD integration and implementation in classroom settings. Applying the theoretical framework offers opportunities for classroom teachers to translate the theoretical perspectives into classroom pedagogical practice. In this way the study makes a significant contribution to the practice of ESD integration and implementation practice in classroom contexts.

By demonstrating the development and application of the theoretical framework, this study has illustrated an innovative pedagogical approach to ESD integration and implementation into a Geography school curriculum. As indicated in Chapter 1 (cf.1.7), the ultimate goal of this study was to contribute towards building the capacities of teachers to more effectively deliver ESD in classroom contexts. This collaborative action research study has provided insights into how a theory-based framework to ESD pedagogy can support building the capacities of teachers to effectively integrate and deliver ESD through teaching and learning in classroom contexts.

This study further contributes to the understanding of how effective ESD integration and implementation by practicing classroom teachers has an impact on the learners' learning experiences and on their learning outcomes, thus contributing to quality education (teaching and learning). The theoretical and practical evidence provided by this study provides a practical framework for designing and implementing ESD interventions through a learner-centred fieldwork teaching method. This contribution is particularly useful to the ESD and Geography education communities in Namibia, where the integration and implementation of ESD through leaner-centred pedagogical approaches continue to constrain the effective integration and implementation of ESD in the Geography school curriculum (Anyolo, 2015; Wilmot, 2017; Anyolo, Kärkkäinen & Keinonen, 2018). The study further contributes towards informing the professional development of teachers by demonstrating how a learner-centred geographical fieldwork teaching approach can be successfully planned and implemented with a Grade 12 class. Applying the theoretical perspectives illustrated by this study can inform and provide several practical directions for classroom teachers, Geography subject teacher advisors, researchers and teacher educators who require empirically-informed pragmatic direction on how best to inform, introduce, implement and administer the professional development of pre-service and in-service Geography teachers in Namibia. The overall contribution of the study in this regard is that of adding to the emerging body of literature on theorising ESD teacher professional development in the context of UNESCO's (2014b) *GAP: Priority Action Area 3,* which emphasises the need to increase the capacities of educators and teacher educators to more effectively deliver ESD.

8.4.3 Value of implementing ESD through learner-centred fieldwork

Effective ESD implementation involves a learner-centred approach to pedagogy (cf. 2.4.1), which promotes learning objectives and outcomes that empower learners to contribute to the goals of sustainable development. This study provided evidence of the value of implementing ESD through a learner-centred fieldwork teaching and learning approach. The study provided an in-depth understanding of the value and the role of geographical fieldwork pedagogy in promoting effective subject teaching and learning experiences for exploring sustainable development challenges, thus contributing to learners' relevant learning outcomes. This contributes to Goal 4: Target 4.1 of the UNSDGs, which emphasises the provision of equitable and quality primary and secondary education leading to relevant and effective learning outcomes (cf. UNESCO, 2016). The research findings revealed that the implementation of ESD through the application of geographical fieldwork teaching method contributes to quality education by facilitating the attainment of ESD learning outcomes (cf. Tables 2.7 and 3.2) as well as the attainment of learning goals, objectives and outcomes stipulated in the Namibian senior secondary school Geography curriculum (cf. 7.2.1). This finding is particularly helpful in understanding how geographical education in general and a geographical fieldwork teaching method in particular contributes towards the promotion of ESD learning objectives and outcomes in learners. Although a number of authors have documented the contribution of the discipline of Geography to ESD (cf. 2.7), not much empirical evidence has been provided on the specific contributions of a geographical fieldwork teaching method to ESD. This study contributes toward closing the gap in knowledge and understanding by providing conceptual perspectives and insights into how the application of a geographical fieldwork teaching method in school Geography contributes to ESD learning objectives and outcomes amongst secondary school leaners.

This research study addresses the need for further research documenting evidence of how ESD contributes to quality primary and secondary education (cf. Laurie *et al.*, 2016). It is also suggested that such evidence is required by Ministries of Education "so that they can write and implement new policies that incorporate ESD" in schools (Laurie *et al.*, 2016:231). The findings of this study provide evidence of the contribution of ESD to quality education by identifying how ESD implementation through a learner-

centred fieldwork teaching method in Geography contributes to the delivery of quality education in a senior secondary school Geography curriculum.

8.4.4 Multidimensional framework of quality in education: an evaluative framework in ESD intervention research

One of the challenges in Namibian schools pertains to researching the extent to which ESD is being implemented and its impact evaluated. There is a paucity of research tools for evaluating teaching processes and learning outcomes resulting from the implementation of ESD in classroom contexts. This scarcity of research tools could be one of the reasons why researchers in Namibia and elsewhere continue to focus on ESD implementation challenges rather than evaluating ESD teaching processes and learning outcomes. A lack of appropriate research tools could also lead researchers to adopting other evaluation tools and methods such as test and examination results, which are not congruent with evaluating all learning outcomes associated with ESD and quality education.

This research study addresses the need for the identification of ways to evaluate the impact and effectiveness of ESD interventions on learning outcomes and teaching practices (cf. Ofei-manu & Didham, 2014; Leicht, Heiss & Byun, 2018) by evaluating an ESD pedagogical intervention in the Namibian senior secondary school curriculum. This collaborative action research project adopted a multidimensional framework of quality in education as an analytical tool for evaluating ESD learning processes and outcomes in the context of quality education. The framework derives its seven conceptual dimensions of quality in education from all three intersecting traditions of quality education (cf. 3.3). The seven conceptual dimensions of quality education provided the analytical categories for analysing and interpreting through the lenses of geographical fieldwork how ESD learning processes and outcomes contributed to the delivery of quality education within the context of the study. Deploying the seven conceptual perspectives of quality in education generated significant insights into how ESD learning processes and learning outcomes through the application of geographical fieldwork teaching method impacted on each of the seven dimensions of quality education. This qualitative approach to evaluating the impact and effectiveness of ESD interventions on quality education (teaching and learning) is an ideal evaluative approach compared to other approaches that seek to quantify the ability of learners'

capacity to recall factual information learned as determinants of quality education. This is because contemporary understanding and interpretations of "quality education is no longer based primarily on fact acquisition" because such education is becoming outdated (Laurie *et al.*, 2016:227). The contemporary understanding of quality education is interpreted within the context of ESD learning objectives and learning outcomes rather than solely on information and fact acquisition (cf. 2.4.3 and 3.5).

Hence, the multidimensional framework of quality in education is justifiably an ideal and alternative innovative approach to traditional methods for analysing and evaluating the contributions of ESD to quality education. The insights illustrated in this study can be applied to other similar contexts in order to analyse, interpret and evaluate the contributions of ESD interventions to quality education. This study has addressed the need for providing evidence on how the contributions of ESD to quality education can be evaluated.

8.4.5 Validation of action research in ESD integration

This study was conducted with the ultimate goal of contributing towards building the capacities of teachers to effectively deliver ESD in classroom contexts. The study established that ESD can be integrated into the formal school Geography curriculum through an action research approach. An action research approach provided an opportunity for classroom teachers to re-orient their teaching practice by "Incorporating the use of teaching and learning methodologies consistent with ESD principles of learner-centred and participatory approaches [e.g. fieldwork]" (UNESCO, 2018:18).

Drawing on action research enabled the researcher to develop an understanding of the challenges that constrained the effective implementation of ESD by the research participants (cf. 6.3.3). This enabled the researcher and the research participants to plan and implement a theory-based ESD classroom intervention as an action plan in response to the challenges constraining teachers from effectively integrating and implementing ESD in their teaching practice. After that, the researcher carried out an analysis to evaluate how the ESD classroom intervention contributed to quality education in the context of the research study. The research results revealed that the implementation of the ESD intervention by teachers contributed to quality education in a number of ways (cf. 7.2). Additionally, the teachers who implemented the ESD intervention acknowledged that it helped to promote effective teaching and learning

experiences and contributed to quality teaching and learning (cf. 6.7.1.7) thus contributed to the quality of education.

Based on the above insights, this study validates UNESCO's (2018) assertion that action research is an ideal approach for overcoming the challenges and problems constraining the effective implementation of ESD in formal education contexts. This study accordingly contributes to the body of knowledge on how ESD can be effectively integrated and implemented into the formal Geography school curriculum through an action research approach. The research study has demonstrated one way in which teachers can integrate and implement ESD in their classroom practice, thereby building their capacity to deliver ESD in classroom contexts and contribute to quality education. This dissertation has contributed to a better understanding of action research as an approach to ESD integration and implementation in formal school contexts within classroom settings.

8.5 RECOMMENDATIONS

The purpose of this research study was not intended to generalise the results from a small sample, but rather to explore how integrating and implementing ESD through the application of geographical fieldwork in practice contributes to quality education. Put differently, the study intended to provide insights into one way in which ESD can be integrated and implemented in a school curriculum in an attempt to ensure quality education. It is about the art of what is possible. The key findings and contribution of the study can hopefully inform the introductory processes of integrating and implementing ESD in the Namibian senior secondary school Geography curriculum through the adoption of learner-centred pedagogies such as geographical fieldwork. The key findings and contribution of the study can also inform the following: ESD integration and ESD research in the Geography curriculum, quality education research and teacher professional development in Namibia.

The findings of the small-scale qualitative survey revealed under-specification of both ESD and geographical fieldwork in the Namibian senior secondary school Geography curriculum documents. An important lesson learned from this research finding is that unless these documents explicitly stipulate the inclusion of ESD and geographical fieldwork in the curriculum and there is adequate support and guidance for teachers,

it is unlikely that ESD will be integrated into the Namibian senior secondary school Geography curriculum. It will also be unlikely that Geography teachers will find it necessary to deliver lessons through the application of geographical fieldwork. Consequently, the researcher calls for a review and re-writing of the senior secondary school Geography curriculum documents (i.e. syllabus and teacher guides) in order to ensure that both ESD and geographical fieldwork are successfully integrated into the official Geography curriculum. It will also be useful to offer support to teachers on how both ESD and geographical fieldwork could be integrated and implemented through learner-centred approaches to teaching and learning.

This study found that the integration of ESD is under-specified in the Geography curriculum and teachers conceptualise ESD as education about sustainable development. The study also established that teachers' teaching practice was characterised by the transmission of knowledge and facts about sustainable development. The above teaching approach to ESD integration and implementation is contrary to Namibia's policy of learner-centred education. There is a need for researchers intending to investigate the integration and implementation of ESD in a similar context to adopt appropriate research methodologies that are consistent with the ethos of ESD integration and implementation. This could be accomplished by researchers adopting action research methodological approaches that may enable both the researchers and the research participants to audition appropriate ESD pedagogical practices consistent with leaner-centred education. Through this, researchers would be able to generate valid and reliable empirical data consistent with the philosophy of ESD integration and implementation. This can help bridge the identified policy-practice gap in terms of Geography teachers' ESD conceptualisation and implementation by enabling researchers to generate reliable and valid data of the ESD implementation processes in classrooms.

One of the major challenges confronting researchers intending to research the impact of pedagogy on the delivery of quality education in Namibian classroom contexts is a lack of suitable research tools through which learning processes and outcomes can be analysed, evaluated and interpreted in the context of quality education. The researcher recommends to other researchers interested in researching quality education in classroom or school contexts to adopt and adapt the multidimensional framework of quality in education or any other similar conceptual tool as a basis for

analysing and evaluating quality education through research or through practice. The multidimensional framework of quality in education is an appropriate and flexible analytical and evaluative tool with which issues of quality education can be interrogated. As discussed earlier (cf. 3.4.7) the multidimensional framework on quality in education is theoretically informed by all three traditions of quality in education and it can "serve as a basis for analysing the quality of educational innovations aimed at any aspect of the education system (e.g. policy changes, national administration, classroom interventions)" (Barrett *et al.*, 2006:15) (cf.3.4.7).

The findings of this research study highlight the need for teacher professional development programmes in Namibia to address the challenges related to the integration and implementation of ESD in the senior secondary school Geography curriculum through learner-centred pedagogical approaches to teaching and learning. There is also a need to orient teachers to the three intersecting traditions of quality in education. The researcher recommends the provision of professional development training of in-service and pre-service Geography teachers. In order for professional development programmes to be effective, they should be informed by a "learner-centred pedagogy and its underpinning constructivist epistemology and located in reflexive practice" (Wilmot, 2017:135). Such an approach to professional development is relevant and applicable to a Namibian context characterised by teachers' incapacity to transition from "a traditional, teacher-centred pedagogy to a democratic, participatory, learner-centred pedagogy" (Wilmot, 2017:135). Teacher educators in institutions of higher education responsible for the provision of pre-service training as well as in-service teacher professional development are recommended to devise and implement a model of teacher professional development situated in reflexive practice, as proposed by Wilmot (2017). This is because such an approach to professional development supports the acquisition of foundational knowledge and pedagogical knowledge for effective integration of ESD into Geography lessons (ibid.).

The researcher further recommends that the teacher professional development programmes in Namibia should incorporate features of all three intersecting traditions of educational quality in the teacher training curricula. This will empower the teachers to contribute to different aspects of quality education through teaching and learning.

8.6 LIMITATIONS OF THE STUDY

The limitations of this research study arise from its design and investigation process. A collaborative action research design undertaken within a qualitative interpretive research methodology was used for this study. This exploratory study derived its research findings from a data-collection process that was spread over two phases of data collection.

Phase 1 involved conducting semi-structured interviews with a sample of 6 senior secondary school Geography teachers in order to gather data pertaining to their conceptualisation of ESD as well as to understand how they integrated and implemented ESD in their teaching practice. The other purpose of the semi-structured interviews was to collect data pertaining to the Geography teachers' understanding and application of geographical fieldwork as a teaching method. A larger sample size than a sample of 6 Geography teachers would have provided more in-depth data. A large sample size might have included a representative sample of Geography teachers drawn from all over Namibia rather than only from the city of Windhoek. Phase 1 of the research process would have benefited from classroom observations of geographical fieldwork lessons planned and conducted independently by the Geography teachers. Data from the observations would have corroborated the semi-structured interview data.

Phase 2 of the study was also limited by the sample size. The researcher planned to involve 3 teachers from different schools during Phase 2 of the study. However, only two teachers from the same school agreed to take part in Phase 2, as a teacher from a different school withdrew, citing unspecified personal reasons. Having another teacher from a different school would have strengthened the findings.

As mentioned earlier, the study was conducted in the city of Windhoek and all teachers who participated were from government schools and not from private schools. This was done because some private schools in Namibia implement a different curriculum from government schools. The findings of this study cannot be generalised to all senior secondary schools in Namibia because the purpose of the study was not to generalise the findings.

8.7 SUGGESTIONS FOR FURTHER RESEARCH

The research findings of this study provide an empirical basis upon which future researchers can pursue further studies. As indicated in Chapter 1, the study is located in the interrelated fields of ESD, quality education and Geography education theory and pedagogy. This study could be expanded by involving many teachers and learners in order to generate richer data on how the integration and implementation of ESD through the application of geographical fieldwork contributes to quality education. By expanding on this study, the research findings that may result from future studies could provide the basis for refuting, supplementing or validating the findings of this study. The researcher suggests the following topics for further research.

- A qualitative survey comparable to that in Phase 1 of this study could be expanded across Namibia in order to gather empirical data pertaining to Geography teachers' integration and implementation of ESD as well as to gather data relating to the teachers' application of this geographical teaching method. A national study would offer rich data and cover the entire Namibian national context. The findings of the survey can then be further examined by conducting interviews with a representative sample in each of the 14 regions of the country in order to corroborate the survey findings.
- In an attempt to further understand how the implementation of ESD through the application of geographical skills contributes to quality education, Phase 2 of this study may possibly be replicated in other schools in order to strengthen or test the validity of the findings documented in this dissertation.
- Further empirical investigations are needed in order to establish how other learner-centred approaches to teaching and learning could contribute to quality education.
- Research studies are needed in order to provide evidence on how ESD is being integrated and implemented by teachers within the Namibia senior secondary school Geography curriculum.
- Another useful study would be an investigation into how Geography teachers assess and evaluate learners in the context of ESD.
- Further research is needed to establish how the Geography pre-service teacher curriculum prepares pre-service teachers on how to integrate and implement

ESD through learner-centred approaches to teaching and learning, such as geographical fieldwork.

8.8 CONCLUSION

This study has provided evidence that ESD can be integrated and implemented in the Geography school curriculum through planning and executing a small-scale pedagogical intervention using an action research approach. The study has demonstrated that ESD can be successfully integrated and implemented by Geography teachers at the classroom level through a learner-centred geographical fieldwork teaching method. More importantly, the study demonstrates how the implementation of ESD through the application of geographical fieldwork contributes to quality education when learners are engaged in real issues in their local environment. The study further exemplified how the application of theoretical frameworks can inform effective ESD classroom practice and provide appropriate analytical tools for evaluating its contribution to quality education. This research study resonates with other studies that attempt to provide empirical evidence on how the integration of ESD into the formal school context can be successfully implemented. Additionally, the study has addressed the need for research studies to document how ESD implementation contributes to quality secondary education in the unique context of Namibia.

REFERENCES

Alampei, I., Malotidi, V., Psallidas, V. and Scoullos, M. 2013. *Education for Sustainable Development in Biosphere Reserves and other Designated Areas: A Resource Book for Educators in South-Eastern Europe and the Mediterranean*. Venice: UNESCO.

Alzaghoul, A.F. 2012. The implication of the learning theories on implementing e-learning courses. *The Research Bulletin of Jordan ACM*, 11(11), pp. 27–30.

Amineh, R.J. and Asl, H.D. 2015. Review of constructivism and social constructivism. *Journal of Social Sciences, Literature and Languages*, 1(1), pp.9-16.

Anderson, A. 2012. Climate change education for mitigation and adaptation. *Journal of Education for Sustainable Development*, 6(2), pp. 191–206.

Anderson, S. 2002. *School improvement through teacher development: case studies of the Aga Khan Foundation projects in East Africa*. Lisse, The Netherlands: Swets & Zetlinger Publishers.

Andrews, J.R., Kneale, P., Sougnez, Y.G., Stewart, M.T. and Stott, T.M., 2003. Carrying out pedagogic research into the constructive alignment of fieldwork. *Planet Special Edition*, 5, pp.51-52.

Anyolo, E. 2015. *Implementing education for sustainable development in Namibia: A case of three senior secondary schools*. Unpublished Masters Dissertation. University of Eastern Finland, Joensuu, Finland.

Anyolo, E. O., Kärkkäinen, S. and Keinonen, T. 2018. Implementing education for sustainable development in Namibia: School teachers' perceptions and teaching practices. *Journal of Teacher Education for Sustainability*, 20(1), pp. 64–81.

Armstrong, C. 2011. Implementing education for sustainable development: The potential use of time-honored pedagogical practice from the progressive era of education. *Journal of Sustainability Education*, 2(2), pp. 2011.

Awases, C. L. 2015. *Secondary school geography teachers' understanding and implementation of learner-centred education and enquiry-based teaching in Namibia*. Unpublished Master's Thesis. Stellenbosch University, Stellenbosch, South Africa.

Bagoly-simó, P. 2014. Tracing sustainability: Education for sustainable development in the lower secondary geography curricula of Germany, Romania, and Mexico. *International Research in Geographical and Environmental Education*, 23(2), pp. 126–141.

Bagoly-Simó, P., Hemmer, I. and Reinke, V. 2018. Training ESD change agents through geography: Designing the curriculum of a master's program with emphasis on education for sustainable development (ESD). *Journal of Geography in Higher Education*, 42(2), pp. 174–191.

Bainton, D., Barrett, A. M. and Tikly, L. 2016. *Improving secondary school teacher quality in Sub-Saharan Africa*. Working Paper No. 03/2016, Bristol Working Papers in Education Series, University of Bristol, UK. https://www.bristol.ac.uk/media-library/sites/education/documents/bristol-working-papers-in-education/improving-secondary-school-teacher-quality-in-sub-saharan-africa.pdf. Accessed: 29 January 2018.

Barrett, A. M., Chawla-Duggan, R., Lowe, J., Nikel, J., and Ukpo, E. 2006. *The concept of quality in education: A review of the international literature on the concept of quality in education*. EdQual Working Paper No. 3, University of Bath & Bristol University.

Barrett, A. M. and Bainton, D. 2016. Re-interpreting relevant learning: An evaluative framework for secondary education in a global language. *Comparative Education*, 52(3), pp. 392–407.

Bednarz, R. S., Petersen, J. F. and Bednarz, S. W. 2007. Geography and education for sustainable development in the United States: The need for educational resources. *Internationale Schulbuchforschung*, pp. 171–184.

Bednarz, S. W. 1999. Fieldwork in K-12 geography in the United States. *International Research in Geographical and Environmental Education*, 8(2), pp. 164–170.

Benavot, A. 2014. Education for sustainable development in primary and secondary education. Background paper prepared for the DESD unit at UNESCO headquarters, Paris, France, 9 March 2014. Document de référence pour le Rapport mondial de suivi.

Berg, B. 2004. *Qualitative research methods for the social sciences*. 5th edn. Boston: Pearson.

Bliss, S. 2006. Geography and geographical education in New South Wales, Australia. *International Research in Geographical & Environmental Education*, 15(2), pp. 149–158.

Bogdan, R. C. and Biklen, S. K. 1998. *Qualitative research in education: An introduction to theory and methods*. 3rd edn. Needham Heights, MA: Allyn & Bacon.

Bonk, C.J. and Cunningham, D.J. 1998. Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In Bonk, C. and Kim, K. (eds). *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse*. New Jersey: Lawrece Erlbaum, pp. 25–50.

Boyle, A., Maguire, S., Conchie, S., Martin, A., Milson, C., Nash, R., Turner, A. and Wurthmann, S. 2003. Fieldwork is good? The student experience of field courses. *Planet*, (Special Issue 5), pp. 48–51.

Butt, G., Hemmer, M., Hernando, A. and Houtsonen, L. 2006. Geography in Europe. In Lidstone, J. and William, M. (eds) *Changing education in a changing world: Past experience, current trends and future challenges*. Dordrecht: Springer, pp. 93–106.

Calhoun, E. 1993. Action research: Three approaches. *Educational leadership*, 51(2), pp. 62–65.

Casinader, N. and Kidman, G. 2018. Fieldwork, sustainability, and environmental education: The centrality of geographical inquiry. *Australian Journal of Environmental Education*, 34(1), pp. 1–17.

Chaka, M. 1997. *Learner-centred education in Namibia: A case study*. Unpublished Master's Thesis. University of Alberta, Edmonton, Canada.

Chaudhary, G. 2015. Factors affecting curriculum implementation for students. *International Journal of Applied Research*, 1(12), pp. 984–986.

Chew, E. 2008. Views, values and perceptions in geographical fieldwork in Singapore schools. *International Research in Geographical and Environmental Education*, 17(4), pp. 307-329.

Chilisa, B. and Kawulich, B. 2012. Selecting a research approach: Paradigm, methodology, and methods. In Wagner, C., Kawulich, B., and Garner, M. (eds). *Doing social research: A global context*. New York, pp. 51–61.

Cohen, L., Manion, L. and Morrison, K. 2000. *Research methods in education*. London: Routledge.

Cohen, L., Manion, L. and Morrison, K. 2003. *Research methods in education*. 5th edn. London: Routledge Falmer.

Cohen, L., Manion, L. and Morrison, K. 2007. *Research methods in education*. 6th edn. London: Routledge Taylor & Francis Group.

Cook, V. 2008. Year 9 students' perceptions of geography fieldwork. *Teaching Geography*, 33(2), p. 72.

Corney, G. 2006. Education for sustainable development: An empirical study of the tensions and challenges faced by geography student teachers. *International Research in Geographical and Environmental Education*, 15(3), pp. 224–240.

Corney, G. and Reid, A. 2007. Student teachers' learning about subject matter and pedagogy in education for sustainable development. *Environmental Education Research*, 3(1), pp. 33–54.

Creswell, J. 2002. *Educational research: planning, conducting, and evaluating quantitative.* Upper Saddle River, NJ: Prentice Hall.

Creswell, J. 2003. *Research design: Qualitative, quantitative and mixed methods approaches*. 2nd edn. London: Sage Publications.

De Leo OAM, J. 2012. *The global values within education for sustainable development: A case study of education for sustainable development in the Australian national curriculum*. Unpublished PhD Thesis. The University of Adelide, Adelide, Australia.

Delors, J. 1996. *Learning, the treasure within: Report to UNESCO International Commission on Education for the Twenty-first Century*. Paris: UNESCO.

Dembélé, M. and Miaro-II, B. R. 2003. Pedagogical renewal and teacher development in sub-Saharan Africa: A thematic synthesis. Background paper for the Biannual Meeting of ADEA, Grand Baie, Mauritius, 3 December 2003.

Dembélé, M. and Oviawe, J. 2007. Introduction: quality education in Africa–international commitments, local challenges and responses. *International Review of education*, 53(5–6).

Denzin, N.K. and Lincoln, Y. 1994. *Handbook of qualitative research*. Thousand Oaks: Sage Publications, INC.

Denzin, N. and Lincoln, Y. 2005. *Handbook of qualitative research*. 3rd edn. Thousand Oaks: Sage.

DeWitt, J. and Storksdieck, M. 2008. A short review of school field trips: Key findings from the past and implications for the future. *Visitor studies*, 11(2), pp. 181–197.

Didham, R. and Ofei-manu, P. 2015. The role of education in the sustainable development agenda: Empowering a learning society for sustainability through quality education. In *Achieving the Sustainable Development Goals: From agenda to action*. IGES.

Didham, R. and Ofei-manu, P. 2018. Advancing policy to achieve quality education for sustainable development. In Leicht, A., Heiss, J., and Byun, W. (eds). *Issues and trends in education for sustainable development*. Paris: UNESCO Publishing, pp. 87–110.

Didham, R. and Ofei-Manu, P. 2012. *Education for sustainable development country status reports: An evaluation of national implementation during the UN Decade of Education for Sustainable Development (2005-2014) in East and Southeast Asia*. http://pub.iges.or.jp/modules/envirolib/view.php?docid=4539. Accessed: 3 March 2018.

Dube, C. 2012. *Implementing education for sustainable development: The role of geography in South African secondary schools*. Unpublished PhD Thesis. Stellenbosch University, Stellenbosch, South Africa.

Dummer, T.J., Cook, I.G., Parker, S.L., Barrett, G.A. and Hull, A.P. 2008. Promoting and assessing 'deep learning' in geography fieldwork: An evaluation of reflective field diaries. *Journal of Geography in higher education*, 32(3), pp. 459–479.

Dunphy, A. and Spellman, G. 2009. Geography fieldwork, fieldwork value and learning styles. *International Research in Geographical and Environmental Education*, 18(1), pp. 19–28.

Ertmer, P.A. and Newby, T.J. 1993. Behaviourism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 6(4), pp. 50–72.

Ertmer, P.A. and Newby, T.J. 2013. Behaviourism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2), pp. 43–71.

Evans, N., Tomas, L. and Woods, C. 2016. Impact of sustainability pedagogies on pre-service teachers' self-efficacy. *Journal of Education for Sustainable Development*, 10(2), pp. 243–261.

Ezzy, G. 2002. *Qualitative analysis: Practice and innovation*. London: Routledge.

Ferrence, E. 2000. Themes in education: Action research. *Brown University: Educational Alliance*, 34(1).

Fien, J. 2001. *Education for Sustainability: A report in the Tela series*. http://eev.vic.edu.au/wp-content/uploads/2015/09/tela08_education_-or_sustainability-Fein.pdf Accessed: 11 August 2017

Firth, R. and Winter, C. 2007. Constructing education for sustainable development: The secondary school geography curriculum and initial teacher training. *Environmental Education Research*, 13 (5), pp. 599–619.

Foskett, N. 1999. Fieldwork in the geography curriculum-international perspectives and research issues. *International Research in Geographical and Environmental Education*, 8(2), pp. 159-163.

Fuller, I., Edmondson, S., France, D., Higgitt, D. and Ratinen, I. 2006. International perspectives on the effectiveness of geography fieldwork for learning. *Journal of Geography in Higher Education*, 30(1), pp.89-101.

Gadotti, M. 2010. Reorienting education practices towards sustainability. *Journal of Education for Sustainable Development*, 4(2), pp. 203–211.

Gauthier, C., Dembélé, M. and Bossonnette, S. 2004. *Quality of teaching and quality of education: A review of research findings*. http://unesdoc.unesco.org/images/0014/001466/146641e.pdf. Accessed: 23 November 2017

Glewwe, P. and Muralidharan, K. 2016. Improving school education outcomes in developing countries: Evidence, knowledge gaps, and policy implications. In *Handbook of the economics of education*, 5, pp.653-743.

Gold, J.R., Jenkins, A., Lee, R., Monk, J., Riley, J., Shepherd, I., Unwin, D. and Hiebert, D. 1991. *Teaching geography in higher education. A Manual of Good Practice*. London: The Institute of British Geographers.

Gough, A. 2006. Sustainable schools in the UN decade of education for sustainable development: meeting the challenge. *Southern African Journal of Environmental Education*, 23, pp. 48–63.

Grant, C. and Osanloo, A. 2014. Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your "house"'. *Administrative Issues Journal: Connecting Education, Practice, and Research*, 4(2), pp.7.

Grindsted, T.S. 2015. The matter of geography in education for sustainable development: The case of Danish university geography. In Leal Filho, W. (ed.). *Transformative approaches to sustainable development at universities*. Cham: Springer, pp. 13–24.

Haigh, M. 1996. Empowerment, ethics, environmental action: A practical exercise. *Journal of Geography in Higher Education*, 20(3), pp. 399–411.

Han, L.F. and Foskett, N. 2007. Objectives and constraints in geographical fieldwork: Teachers' attitudes and perspectives in senior high schools in Taiwan. *International Research in Geographical & Environmental Education*, 16(1), pp. 5–20.

Hancock, B., Windridge, K. and Ockleford, E. 2007. *An introduction to qualitative Research*.

Hannafin, M.J., Hill, J.R. and Land, S.M. 1997. Student-centred learning and interactive multimedia: Status, issues, and implication. *Contemporary Education*, 68 (2), p. 94.

Haubrich, H., Reinfried, S. and Schleicher, Y. 2008. Lucerne declaration on geographical education for sustainable development. *Interaction*, 36 (1), p. 39.

Hellberg-Rode, G., Schrüfer, G. and Hemmer, M. 2014. Do teachers need specific professional competences to implement ESD? Theoretical basics, research design and first results. *Journal of Geography Education*, 42(4), pp. 257–281.

Holly, P. and Whitehead, D. 1986. *Action research in schools: Getting it into perspective*. Classroom Action Research Network.

Hsieh, H.F and Shannon, S.E. 2005. Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), pp. 1277–1288.

Imenda, S. 2014. Is there a conceptual difference between theoretical and conceptual frameworks? *Journal of Social Sciences*, 38(2), pp. 185–195.

Israel, L. 2012. Putting geography education into place: What geography educators can learn from place-based education, and vice versa. *Journal of Geography*, 111(2), pp. 76–81.

Job, D., Day, C. and Smyth, T. 1999. *Beyond the bike sheds: Fresh approaches to fieldwork in the school locality*. Geographical Association.

Kadji-Beltran, C., Christodoulou, N., Zachariou, A., Lindemann-Matthies, P., Barker, S. and Kadis, C. 2016. An esd pathway to quality education in the Cyprus primary education context. *Environmental Education Research*, 23(7), pp. 1015–1031.

Kalamas Hedden, M.., Worthy, R., Akins, E., Slinger-Friedman, V and Paul, R. 2017. Teaching sustainability using an active learning constructivist approach: Discipline-specific case studies in higher education. *Sustainability*, 9(8), p. 1320.

Kalina, C. and Powell, K. C. 2009. Cognitive and social constructivism: Developing tools for an effective classroom. *Education*, 130(2), pp. 241–251.

Kalumba, E. 2012. *Improving the quality and relevance of environmental learning through the use of a wider range of preferred teaching methods: A case of primary*

schools in Mufulira District in the Copperbelt Province in Zambia. Unpublished Master's Thesis. Rhodes University, Grahamstown, South Africa.

Kanyimba, A. 2002. *Towards the incorporation of environmental education in the namibian secondary school curriculum*. Unpublished Master's Thesis. University of South Africa, Pretoria, South Africa.

Kanyimba, A., Hamunyela, Mi. and Kasanda, C. 2014. Barriers to the Implementation of Education for Sustainable Development in Namibia's Higher Education Institutions. Creative Education, 5(4), p. 242.

Kapenda, H. 2008. *Translating policy into practice: Aspects of learner-centred classroom practices in mathematics in Namibian secondary schools*. Unpublished PhD Thesis. University of the Western Cape, Belville, South Africa.

Kemmis, S. and McTaggart, R. 1992. *The action research planner*. Geelong, Victoria: Deakin University Press.

Kemmis, S. and McTaggart, R. 2005. *Participatory action research: Communicative action and the public sphere*. Sage Publications Ltd.

Kent, M., Gilbertson, D.D. and Hunt, C. 1997. Fieldwork in geography teaching: A critical review of the literature and approaches. *Journal of Geography in Higher Education*, 21(3), pp. 313-332.

Khalil, M.K. and Elkhider, I.A. 2016. Applying learning theories and instructional design models for effective instruction. *Advances in Physiology Education*, 40(2), pp. 147–156.

Kieu, T.K., Singer, J. and Gannon, T. J. 2016. Education for sustainable development in Vietnam: Lessons learned from teacher education. *International Journal of Sustainability in Higher Education*, 17(6), pp. 853–874.

Kivunja, C. and Kuyini, A. B. 2017. Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education*, 6(5), pp. 26–41.

Klein, E.S. and Merritt, E. 1994. Environmental education as a model for constructivist teaching. *The Journal of Environmental Education*, 25(3), pp. 14–21.

Kondracki, N.L., Wellman, N.S. and Amundson, D.R. 2002. Content analysis: review of methods and their applications in nutrition education. *Journal of Nutrition Education and Behavior*, 34(4), pp. 224–230.

Kopnina, H. 2012. Education for sustainable development (ESD): The turn away from "environment" in environmental education? *Environmental Education Research*, 18(5), pp. 699–717.

Kothari, C. R. 2004. *Research methodology: Methods and techniques*. New Age International.

Kozulin, A. 1998. *Psychological tools: A sociocultural approach to education*. Cambridge, MA: Harvard University Press.

Kumar, K. and Sarangapani, P. M. 2004. History of the quality debate. *Contemporary Education Dialogue*, 2(1), pp. 30–52.

Kwan, T. and So, M. 2008. Environmental learning using a problem-based approach in the field: A case study of a Hong Kong school. *International Research in Geographical and Environmental Education*, 17(2), pp. 93–113.

Lai, K.C. 1999. Geographical fieldwork as experiential learning: A multiple case study of secondary school field trips in Hong Kong. Unpublished PhD Thesis. Queensland University of Technology.

Lankshear, C. and Knobel, M. 2004*. A handbook for teacher research: From design to implementation*. London: Open University.

Laurie, R., Nonoyama-Tarumi, Y., Mckeown, R. and Hopkins, C. 2016. Contributions of education for sustainable development (ESD) to quality education: A synthesis of research. *Journal of Education for Sustainable Development*, 10(2), pp. 226-242.

Leedy, P.D. and Ormrod, J.E. 2005. *Practical research. Planning and design*. 8th edn. New Jersey: Pearson Education Upper Saddle River.

Le Grange, L. 2005. Reflexivity and new modes of knowledge production: The case of the human and social sciences. South African Journal of Higher Education, 19 (Special Issue 1), pp. 144–1455.

Le Grange, L. and Ontong, K. 2018. Towards an integrated school geography curriculum: The role of place-based education. Alternation Journal, (21), pp. 12–36.

Le Grange, L. and Reddy, C. 2007. Learning of environment (s) and environment (s) of learning. Southern African Journal of Environmental Education, 24, pp. 76–81.

Leicht, A., Combes, B., Byun, W., and Agbedahin, A. 2018. From Agenda 21 to Target 4.7: The development of education for sustainable development. In Leicht, A., Heiss, J., and Byun, W. (eds). *Issues and trends in education for sustainable development*. 5th edn. Paris: UNESCO Publishing, pp. 25–38.

Leicht, A, Heiss, J. and Byun, W. (eds). 2018. *Issues and trends in education for sustainable development*. 5th edn. Paris: UNESCO Publishing.

Lock, R. 1998. Fieldwork in the life sciences. *International Journal of Science Education*, 20(6), pp. 633–642.

Lonergan, N. and Andresen, L. 1988. Field-based education: Some theoretical considerations. *Higher Education Research and Development*, 7(1), pp. 63–77.

Longhurst, J., Bellingham, L., Cotton, D., Isaac, V., Kemp, S., Martin, S., Peters, C., Robertson, A., Ryan, A., Taylor, C. and Tilbury, D., 2014. *Education for sustainable development: Guidance for UK higher education providers*. QAA/HEA Education for sustainable development group.

Lotz-Sisitka, H. 2011. Teacher professional development with an education for sustainable development focus in South Africa: Development of a network, curriculum framework and resources for teacher education. *Southern African Journal of Environmental Education*, 28, pp. 30–71.

Lotz-Sisitka, H. 2013. Conceptions of quality and “learning as connection”: Teaching for relevance. *Southern African Journal of Environmental Education*, 29, pp. 25–38.

Lotz-Sisitka, H. 2008. Environmental education and educational quality and relevance: Opening the debate. *Southern African Journal of Environmental Education*, 25, pp. 5–12.

Lotz-Sisitka, H. and Lupele, J. 2017. ESD, learning and quality education in Africa: Learning today for tomorrow. In Lotz-Sisitka, H., Shumba, O., Lupele, J. and Wilmots, D. (eds). *Schooling for Sustainable Development in Africa*. Cham: Springer, pp. 3–24.

Maxwell, J. 1992. Understanding and validity in qualitative research. *Harvard Educational Review*, 62(3), pp. 279–301.

McKeown, R. 2002. Progress has been made in education for sustainable development. *Applied Environmental Education and Communication: An International Journal*, 1(1), pp. 21–23.

McKeown, R. and Hopkins, C. 2017. Quality education and education for sustainable development. In *A decade of progress on education for sustainable development: Reflections from the UNESCO Chairs Programme*. Paris: UNESCO Publishing, pp. 28–37.

McNiff, J., Lomax, P. and Whitehead, J. 1996. *You and your action research project*. London: Routledge.

Merriam, S. 2009. *Qualitative research: A guide to implementation and design*. San Francisco: Jossey-Bass.

Ministry of Education and Culture (MoE), Namibia. 1993. *Toward education for all: A development brief for education, culture, and training*. Windhoek: Gamsberg Macmillan Publishers.

Ministry of Education (MoE), Namibia. 2009a. *The national curriculum for basic education*. Okahandja: NIED.

Ministry of Education and Culture (MoE), Namibia. 2009b. *Namibia Senior Secondary Certificate (NSSC): Geography Syllabus (Grade 11-12)*. Okahandja: NIED.

Minner, D., Levy, A. and Century, J. 2010. Inquiry-based science instruction - what is it and does it matter? Results from a research synthesis years 1984 to 2002. *Journal of Research in Science Teaching*, 47(4), pp. 474–496.

Morgan, A. 2009. Learning communities, cities and regions for sustainable development and global citizenship. *Local Environment*, 14(5), pp. 443–4459.

Mutekwe, E., Ndofirepi, A., Maphosa, C., Wadesango, N. and Machingambi, S. 2013. A SWOT analysis of the rise and pedagogical implications of the social constructivist epistemology in educational practice. *The Anthropologist*, (1), pp. 53–65.

Mutekwe, E. 2018. Using a Vygotskian sociocultural approach to pedagogy: Insights from some teachers in South Africa. *Journal of Education (University of KwaZulu-Natal)*, 71, pp. 58–72.

Mutwa, R. 2002. In-service education and classroom practice: Geography teaching in Namibia. In Lewis, S. (ed.). *Informing reform: Namibian research to inform education policy and practice*. Vol 2. Windhoek: Multi Services Printers.

Naish, M., Rawling, E. and Hart, C. 2002. The enquiry-based approach to teaching and learning geography. In Smith, M. (ed.). *Teaching geography in secondary schools: A reader*. London: Routledge Falmer/The Open University, pp. 63–69.

Namafe, C. M. 2008. What selected basic schools in western Zambia are best at in environmental and sustainability education. *Southern African Journal of Environmental Education*, 25, pp. 59–80.

Namibia Statistics Agency (NAC). 2019. Sustainable development goals baseline report Namibia 2019. Windhoek.NAS.

Ng, P. T. 2015. What is quality education? How can it be achieved? The perspectives of school middle leaders in Singapore. *Educational Assessment, Evaluation and Accountability*, 27(4), pp. 307–322.

Nguyen, T. P. 2017. Education for sustainable development in Vietnam: Exploring the geography teachers' perspectives. *International Research in Geographical and Environmental Education*, 27(4), pp. 1–16.

NIED. 2003. *Learner-centred education in the Namibian context: A conceptual framework*. Okahandja: NIED

Nikel, J. and Lowe, J. 2010. Talking of fabric: A multi-dimensional model of quality in education. *Compare*, 40(5), pp. 589–605.

Nsubuga, Y. 2014. Towards a framework for analysing notions of education quality in different teacher education orientations. *Mediterranean Journal of Social Sciences*, 5(7), pp. 381–389.

Nyambe, J. and Wilmot, D. 2012. New pedagogy, old pedagogic structures: A fork-tongued discourse in Namibian teacher education reform. *Journal of Education*, 55, pp. 55–83.

Nyambe, J. and Wilmot, D. 2014. Post-apartheid pedagogic reform in Namibia: The route to learner-centred pedagogy and its implementation. In Schafer, M., Samson, D., and Brown, B. (eds). *Namibia counts*. Grahamstown: Rhodes University.

O'Sullivan, M. 2006. Lesson observation and quality in primary education as contextual teaching and learning processes. *International Journal of Educational Development*, 26(3), pp. 246–260.

Ockhuizen, J. A. 2018. *Learner-centred teaching and learning practices in geography teaching in Namibian secondary schools*. Unpublished PhD Thesis. University of the Free State, Bloemfontein, South Africa.

Ofei-manu, P. and Didham, R. 2014. *Quality education for sustainable development: A priority in achieving sustainability and well-being for all*.

Ontong, K. and Le Grange, L. 2014. The role of place-based education in developing sustainability as a frame of mind. *Southern African Journal of Environmental Education*, 30, pp. 27–38.

Oost, K., De Vries, B. and Van der Schee, J. A. 2011. Enquiry-driven fieldwork as a rich and powerful teaching strategy–school practices in secondary geography education in the Netherlands. *International Research in Geographical and Environmental Education*, 20(4), pp. 309–325.

Orion, N. 1993. A model for the development and implementation of field trips as an integral part of the science curriculum. *School Science and Mathematics*, 93(6), pp. 325–331.

Orion, N. and Hofstein, A. 1994. Factors that influence learning during a scientific field trip in a natural environment. *Journal of Research in Science Teaching*, 31(10), pp. 1097–1119.

Patton, Q. M. 2002. *Qualitative research and evaluation methods*. 3rd edn. CA: Thousand Oaks Sage.

Pigozzi, M. J. 2010. Implementing the UN Decade of Education for Sustainable Development (DESD): Achievements, open questions and strategies for the way forward. *International Review of Education*, 56(2–3), pp. 255-269.

Pigozzi, M. J. 2007. Quality in education defines ESD. *Journal of Education for Sustainable Development*, 1(1), pp. 27–35.

Raselimo, M. 2017. Situating the Lesotho secondary school geography in curriculum relevance debate. *International Research in Geographical and Environmental Education*, 26(2), pp. 121–134.

Redclift, M. 2005. Sustainable development (1987–2005): An oxymoron comes of age. *Sustainable Development*, 13(4), pp. 212–227.

Reinfried, S. and Hertig, P. 2011. *Geographical education: How human environment-society processes work*. Encyclopaedia of Life Support Systems (EOLSS).

Remmen, K. B. and Frøyland, M. 2014. Implementation of guidelines for effective fieldwork designs: Exploring learning activities, learning processes, and student engagement in the classroom and the field. *International Research in Geographical and Environmental Education*, 23(2), pp. 103–125.

Remmen, K. B. and Frøyland, M. 2015. What happens in classrooms after earth science fieldwork? Supporting student learning processes during follow-up activities. *International Research in Geographical and Environmental Education*, 24(1), pp. 24-42.

Rieckmann, M. 2017. *Education for sustainable development goals: Learning objectives*. Paris: UNESCO Publishing.

Rieckmann, M. 2018. Learning to transform the world: Key competencies in education for sustainable development. In Leicht, A., Heiss, J., and Byun, W. (eds). *Issues and trends in education for sustainable development*. Paris: UNESCO Publishing, pp. 39–59.

Rule, P. and John, V. M. 2015. A Necessary dialogue: Theory in case study research. *International Journal of Qualitative Methods*,14(4), pp. 1–11.

Samoff, J. 2007. Education quality: The disabilities of aid. *International Review of Education*, 53(5–6), pp. 485–507.

Sánchez, J. 2011. Teaching geography for a sustainable world: A case study of a secondary school in Spain. *Review of International Geographical Education Online*, 1(2).

Schumacher, S. and McMillan, J. 2006. *Research in Education Evidence–Based Inquiry*. Boston. Pearson Education.

Schumacher, S. and McMillan, J. 2014. *Research in Education Evidence-Based Inquiry*. Seventh Ed. Boston: Pearson Education.

Schweisfurth, M. 2011. Learner-centred education in developing country contexts: From solution to problem? *International Journal of Educational Development*, 31(5), pp. 425–432.

Schweisfurth, M. 2015. Learner-centred pedagogy: Towards a post-2015 agenda for teaching and learning. *International Journal of Educational Development*, 40, pp. 259–266.

Sewilam, H., McCormack, O., Mader, M. and Raouf, M. 2015. Introducing education for sustainable development into Egyptian schools. *Environment, Development and Sustainability*, 17(2), pp. 221–238.

Shah, A. and Treby, E. 2006. Using a community-based project to link teaching and research: The Bourne Stream partnership. *Journal of Geography in Higher Education*, 30(1), pp. 33-48.

Shinyemba, D.N.1999. *Learner-centred education: Development of teachers' concepts and practice of teaching in the context of Namibian school reform*. Oxford Brookes University.

Sibuku, C. 1997. *Beginners teachers' perceptions of a learner-centred approach to teaching in Namibia*. Unpublished Master's Thesis. University of Alberta, Edmonton, Canada.

Sifuna, D. N. and Sawamura, N. 2010. *Challenges of quality education in Sub-Saharan Africa-some key issues*. Osaka: Nova Science Publishers.

Sim, K. and Stoltman, J. 2013. Education for sustainable development within school geography: A proposed model. *Journal of Korean Geographical Society*, 48(3), pp. 466–481.

Simasiku, F. 2012. *An investigation of how enquiry-based fieldwork develops action competence in Grade 12 Geography: A Namibian case study*. Unpublished master's Thesis. Rhodes University, Grahamstown, South Africa.

Soloway, E., Jackson, S.L., Klein, J., Quintana, C., Reed, J., Spitulnik, J., Stratford, S.J., Stu., Eng, J and Scala, N.1996. Learning theory in practice: Case studies of learner-centered design. In Proceedings of the SIGCHI conference on Human factors in computing systems. Vancouver, pp. 189–196.

Stewart, D.W. and Shamdasani, P.N. 1990. *Focus groups: Theory and practice*. Newbury Park: Sage.

Stoddart, D. 1986. *On geography and its history*. Blackwell.

Swaan, M. and Wijnsteekers, E. 1999. Fieldwork in the Dutch mountains-A bridge too far? *International Research in Geographical and Environmental Education*, 8(2), pp. 171–174.

Terre Blanche, M. and Durrheim, K. 1999. Histories of the present: Social science research in context. In *Research in practice: Applied methods for the social sciences*. Cape Town: Cape Town University Press, pp. 1–17.

Thanh, N. C. and Thanh, T. 2015. The interconnection between interpretivist paradigm and qualitative methods in education. *American Journal of Educational Science*, 1(2), pp. 24–27.

Tikly, L. 2010. *A framework for education quality.* EdQual Policy Brief No. 10. https://www.edqual.org/publications/policy-riefs/edqualpb10.pdf/at_download/file.pdf. Accessed: 4 June 2018

Tikly, L. and Barrett, A.M. 2010. *A framework for education quality: A good quality education arises from interaction between three enabling environments: policy, the school, and the home and community*. EdQual Project: University of Bristol.

Tikly, L. and Barrett, A.M. 2011. Social justice, capabilities and the quality of education in low income countries. *International Journal of Educational Development*, 31(1), pp. 3–14.

Tilbury, D. 2011. *Education for sustainable development: An expert review of processes and learning*. Paris: UNESCO.

Tripp, D. 2005. Action research: A methodological introduction. *Educacao e pesquisa*, 31(3), pp. 443–66.

Tshiningayamwe, S. 2011. *Implementation of Environmental Learning in the NSSC Biology curriculum Component: A case study of Namibia*. Unpublished master's Thesis, Rhodes University, Grahamstown

Tshiningayamwe, S. 2017. Education for sustainable development in the Namibian Biology curriculum. In Lotz-Sisitka, H., Shumba, O., Lupele, J. and Wilmots, D. (eds). *Schooling for Sustainable Development in Africa*. Vol 8. Cham: Springer, pp. 107–118.

UNECE. 2005. *UNECE strategy for education for sustainable development*. Vilnius. http://www.unece.org/fileadmin/%0ADAM/env/documents/2005/cep/ac.13/cep.ac.13.2005.3.rev.1.e.pdf. Accessed: 24 October 2018

UNESCO-UNEP. 1992. *Agenda 21*. New York.

UNESCO. 2004a. *Education for all: The quality imperative, contemporary education dialogue*. Paris: UNESCO Publishing.

UNESCO. 2004b. *EFA global monitoring report 2005: The quality imperative*. Paris: UNESCO Publishing.

UNESCO. 2005a. *Contributing to a more sustainable future: Quality education, life skills and ESD*. http://unesdoc.unesco.org/images/0014/001410/141019e.pdf. Accessed: 29 July 2017

UNESCO. 2005b. *United Nations Decade of Education for Sustainable Development (2005-2014): International implementation scheme*. Paris: UNESCO Publishing.

UNESCO. 2006. *Framework for the UNDESD international implementation scheme*. http://unesdoc.unesco.org/images/0014/001486/148650E.pdf. Accessed 11 September 2017

UNESCO. 2012. *Education for Sustainable Development: Source book*. No 4. Paris: UNESCO Publishing.

UNESCO. 2014a. *Teaching and learning: Achieving quality for all: EFA global monitoring report 2013/14*. http://unesdoc.unesco.org/images/0022/002256/225660e.pdf. Accessed 12 September 2017.

UNESCO. 2014b. *UNESCO roadmap for implementing the global action programme on education for sustainable development*. Paris: UNESCO Publishing.

UNESCO. 2016. *Global education monitoring report: Education for people and planet*. Paris: UNESCO Publishing.

UNESCO. 2018. *Integrating education for sustainable development (ESD) in teacher education in South-East Asia: A guide for teacher educators*. https://bangkok.unesco.org/sites/default/files/2018-10/265760E.pdf. Accessed: 27 January 2019.

UNESCO ICES. 1997. "Proceedings" international conference on environment and society: Education and public awareness for sustainability: Paris: UNESCO Publishing.

UNICEF. 2000. *Defining quality in education*. UNICEF Working Paper Series.

Van Graan, M. 1998. Learner-centred education: Equal to group work? Findings from Namibian classrooms. *Journal for Educational Reform in Namibia*, 8, pp. 1–13.

Van Graan, M. 1999. Learner-centred education in Namibia: A case study. In Squazzin, T. and Van Graan, M. (eds). Education reform and innovation in Namibia: How best can change in classroom practice be implemented and supported? Proceedings from NIED Educational Conference. Cape Town: Cape Town: CTP Book Printers, pp. 124–127.

Vavrus, F., Thomas, M. and Bartlett, L. 2011. *Fundamentals of teacher education development ensuring quality by attending to inquiry: Learner-centred pedagogy in sub-Saharan Africa*. Addis Ababa: UNESCO.

Verspoor, A. M. (ed.). 2003. *The challenge of learning: Improving the quality of basic education in Sub-Saharan Africa*. Paris: ADEA.

Voluntary National Review (VNR), Namibia. 2018. *Implementation of sustainable development goals*. Windhoek: National Planning Commission of Namibia.

Vygotsky, L. S. 1978. *Mind in society: The development of higher psychological process*. Cambridge, MA: Harvard University Press.

Wals, A. 2009. *Review of contexts and structures for education for sustainable development (DESD, 2005–2014)*. UNESCO.

WCED. 1987. *World Commission on Environment and Development: Our common future*. UNESCO.

Weber, B. and Mendelsohn, J. 2017. *Informal settlements in Namibia: their nature and growth: Exploring ways to make Namibian urban development more socially just and inclusive*. Windhoek: John Meinert Printing.

Wilmot, D. 2017. Issues-based enquiry: An enabling pedagogy for ESD in teacher education and school geography. In Lotz-Sisitka, H., Shumba, O., Lupele, J. and Wilmots, D. (eds). *Schooling for Sustainable Development in Africa*. Cham: Springer, pp. 129–138.

Yang, D. et al. 2013. Chinese junior high school students' perceptions of geographic fieldwork: a case study. *Journal of Geography*, 112(4), pp. 156–164.

Yang, D., Wang, Z., Xu, D. and Deng, Z. 2014. A small-scale survey of the views and attitudes of junior high school teachers in China toward geographical fieldwork. *International Research in Geographical and Environmental Education*, 23(3), pp. 197–212.

Yin, R. 2011. *Qualitative research from start to finish*. New York: The Guilford.

Zhang, Y. and Wildemuth, B.M. 2009. Qualitative analysis of content. In Wildemuth, B. (ed.). *Applications of social research methods to questions in information and library science*. Westport, CT: Libraries Unlimited, pp. 318–329.

APPENDICES

APPENDIX 1A: SEMI STRUCTURED INTERVIEW GUIDE FOR TEACHERS

1. May you please introduce yourself (Gender, work experience, number of years teaching geography)?
2. What is your understanding of the following terms?
   (a) Education for Sustainable Development (ESD)

   (b) Geographical fieldwork

   (c) Quality education
3. Do you integrate education for sustainable development in your geography lessons? If so, in what ways? Please provide any link to the syllabus where this occurs.
4. Please describe any education for sustainable development learning activities you engage your learners with in your geography class?
5. What challenges do you encounter when planning or implementing education for sustainable development in your teaching? And how can those challenges be overcome?
6. Do you utilise group work and project work in your class? If so, please describe their purpose.
7. Do you utilise the fieldwork method (data collection and field investigations) in your teaching of geography? If so, where do you take learners? What is the purpose, organisation, and duration?
8. How competent do you feel you are to teach fieldwork skills (data collection and field investigations) to your learners?
9. What geography syllabus topic/theme do you integrate fieldwork skills (data collection and field investigations) with in your class? And what activities do you involve your learners with?
10. What follow-up activities do you engage learners with after fieldwork activities?
11. Describe what challenges you encounter when teaching fieldwork skills (data collection and field investigations). How can those challenges be overcome?

APPENDIX 1B: SAMPLE TRANSCRIPT OF TEACHERS INTERVIEW

1. May you please introduce yourself (Gender, work experience, number of years teaching geography)?

SSIT5: My name is SSIT5, I have been teaching Geography for the past 11 years and at senior level I have been teaching Geography for the past 8 years or so. I was educated at Windhoek College of Education and then I went on to do my fourth-year teaching qualification at North-West University in Potchefstroom, South Africa via correspondence. I think in a nutshell that is about me and the teaching of geography.

2. (a) What is your understanding of Education for Sustainable Development (ESD)?

SSIT5: I think that is where I needed aa, when I went through your questions, I needed so much clarity on the issue of sustainable development. What are we really referring to here, because when you talk about the word sustainable... We derive it from the term, in my own understanding … sustainability, something that needs to be preserved for the future. When we talk about education for sustainable development, maybe it is the education that is aimed at sustaining the future in terms of in what way the country has to develop, in my own little understanding of the concept itself because it is quite remote in a way because we do a whole lot..you come across the word sustainable, sustainability in geography but the concept itself in full sustainable development you hardly find such concept in itself the way it stands. That is my understanding.

(b) What is your understanding of Geographical fieldwork as a teaching method?

SSIT5: My understanding of geographical fieldwork, we are talking about the paper three, which is called alternative to coursework. In order to prepare thoroughly for such a paper, we need to undertake what we call geographical research or inquiry-based type of studies, where you need to get into the field and gather data after gathering the data, analysing it. You do presentation, data analysis and then you conclude and then during that you have now to refer back to the purpose of why you went into the field. What is it that we're trying to get at the hypothesis and all that, so that's geographical inquiry doing something that is out of the theoretical realm of education, doing it in a practical way. That is geographical fieldwork. But then it encompasses a lot of topics in itself there is human geography part of geography, there is a physical part of geography so either way that is geographical fieldwork.

(c) What is your understanding of the term Quality education?

SSIT5: My understanding of quality education is giving education that is aimed at preparing someone who is in education for a better future quality means you are giving something that is way above par. Something that the education that is the education that is going to be able to assist someone in order to achieve something in future. When we talk about quality education, normally the key emphasis is to talk about quality teaching, quality planning, quality assessment, everything that is done in the setup of education, encompasses, a word itself quality. Everything must be done to the highest standard possible. That is my understanding of quality education. [From the teaching perspective] Quality planning and then the delivering of the lesson itself

must be of quality, like the lesson presentation, I mean the process also the assessment itself must be quality assessment then everything else that comes out of it must be able to carry weight when it comes to quality because it's quality vis a vis quantity education here we focus specifically on something that is way better learning process.

3. Do you integrate education for sustainable development in your geography lessons? If so, in what ways? Please provide any link to the syllabus where this occurs.

SSIT5: As I have alluded to earlier, specifically when we are dealing Geography the word itself sustainable appears in few topics or so or chapters, most importantly find such a word energy. When we talk about the sources of energy that we use, renewable and non-renewable sources. We talk about non-renewable sources these are the sources that are still providing the world with a lot of energy in terms of if you have to compare renewable and non-renewable but then in order for sustainability purposes these resources need to be used in such a manner that they last longer. So that the future generations can also be able to utilise them because as we are told they are non-renewable so once used up they can never be replenished. And then if we talk about sustainability itself again, we still go back to renewable sources again. Even though that they can be replenished by natural phenomenon, they can still also be used in such a manner that we preserve them for the future. So, in the syllabus you can be able to link this to energy, you can be able to link this to water resources. So, normally most of the time it's the human part of geography where you understand the word sustainability or sustainable development in a way.

4. Please describe any education for sustainable development learning activities you engage your learners with in your geography class?

SSIT5: Not really per say sustainable development like activities. These learning activities that we normally do is, you can be able to give learners a project in a way to go out there and do research on as I said, on energy because energy is the most topic that deals much with this term sustainable development because even in the Namibian energy policy the term sustainability is there. So, it is something that comes from top down, but then in our books you engage you give them a classwork you give them project. Go out there and do research in this type of energy and how it can be harnessed for sustainable development in our country. The point in question can be wind power, Namibia has been planning on setting up a Wind power in the area of Lüderitz and so how will that be able to improve the quality of life for the people that lives and how will the country benefit in general from this type of a renewable source. Water resources, industries, talk about energy, in population geography, so the human part of geography literally covers sustainable development in itself.

5. What challenges do you encounter when planning or implementing education for sustainable development in your teaching? And how can those challenges be overcome?

SSIT5: I wouldn't say I encountered challenges because when it comes to the, as I said, it boils down to planning. If you carefully plan, then implementation I do not think it's going to be such a big issue. But if you do not carefully plan as alluded to earlier, this what you call quality planning if there is no quality planning then implementation

is surely going to fail. But as I stand here, I do not think I have encountered any challenges as far as this part is concerned or any topic that involves sustainable development.

6. Do you utilise group work and project work in your class? If so, please describe their purpose.

SSIT5: We do, it's part of the learner-centred education that we follow in Namibian schools. We do utilise project and groupwork because this helps learners because even the mainstream education, we have learners that are gifted that are classified as per say as gifted and we've got learners that are classified as slow learners and also gifted learners. So, if you happen to teach and you do not utilise groupwork or groups then you are dis-advantaging these learners who cannot be able to catch-up. By doing work in groups the learners have got the potential to tap into each other's knowledge, learn from each other, and generally share ideas and then be on the same level at the end of the day. As I said, leaners will have an opportunity be able to share from each other but if they do it as individual, those so-called gifted learners are the only one who will benefit from the lessons. So, if you put them in groups, they will be able to learn from each other and at the end of the day you are going to achieve a greater good for everyone else involved.

7. Do you utilise the fieldwork method (data collection and field investigations) in your teaching of geography? If so, where do you take learners? What is the purpose, organisation, and duration?

SSIT5: When we do geographical inquiry or when we do fieldwork exercises? It all depends to the topic at hand for example, if we have to do what we call traffic counts. Traffic counts we normally do, traffic counts, at intersections of robots at an intersection of a particular street and then you classify learners in groups. One group will be standing on the other side of the road in order for them to count traffic moving in a particular direction and then another group will be counting in a particular moving in a particular direction, so that in itself is one example that we use and then in there learners have prepare equipment such as the clipboards, recording sheets, pens, umbrellas, depending on the weather because the weather have to be taken into account when you are doing this type of fieldwork. So, we do that normally at places that are nearby the school. So, in order to cut on the transport costs and everything else becomes easier with the movement to and from the place where you do the fieldwork itself and then data is collected by means of a on this recording sheet, you record data. The number of cars depending on what is really the hypothesis that you're trying to prove at the end of the day. So, data is collected in the form of using what you call a tally count, using tallies because it's easier, it's quick, it saves time, and then the duration of this whole activity normally takes only 15 minutes of every hour. So, you don't count for the whole hour you count only for 15 minutes. So that in order to avoid exhaustion, learners should not be exhausted. So, if they have to count for whole hour it means they will be exhausted and then they will lose interest eventually they will start making elementary mistakes. So, which means normally, counts last for 15 minutes of every hour. Then the other issue is the issue of shopping survey in order to classify everything according to shopping habits of customers at a particular shopping centre. So, they can either be taken to the Red Cross Shopping Centre here,

commonly known as Katutura Shoprite. They are going to be classified in groups to ask shoppers that comes to that shop certain questions that we set up before we undertake this fieldwork exercise and then we normally do what we call a trial survey or a pilot study. So, we go and test the questions that we have on our questionnaires a day before we go for the actual study in order for us to determine if the questions are appropriate, are they relevant and all that. So, when we see that a specific question, people were sceptical to answer a specific question then we know that this particular question it might be too personal, it might be able to touch on people's emotions and so forth. So, in order to avoid that we have to conduct a pilot study then we come, we polish out our questions and then we go and do the actual study itself. As I said, most of the time when we do shopping counts or shopping surveys we area looking at the shopping habits or how long do people spend in particular shopping centre, how far did they travel to get to the shopping centre, what type of goods? Is it high order goods? or low order goods that they came for? and what mode of transport they used to get there. Normally the purpose is to understand, each and every fieldwork is having its own purpose, it having its own aim, what are you trying to achieve at the end of the day. So, that is how we do it.

8. How competent do you feel you are to teach fieldwork skills (data collection and field investigations) to your learners?

SSIT5: The competency! One is competent enough because it boils down to experience in teacher training, we are not literally taught how to teach geographical inquiries. So, they even make it clear in the syllabus that many teachers, or if not all teachers in Namibia, they are not yet competent in the teaching of this particular theme in geography. Therefore, it boils down to experience. So, in the earlier years of teaching, one was not really that competent especially with how to go about in formulating hypothesis, to go about with the data collection methods, to go about the presentation and so forth, but as the years went, one has to do what we call reflections i.e. What is it that I did last year? What was wrong? What can I see improving? So, as years went by, as I have said I've been teaching for so many years now, so one is competent enough and teach geographical inquiries, any day, any time provided the time allows or time permits.

9. What geography syllabus topic/theme do you integrate fieldwork skills (data collection and field investigations) with in your class? And what activities do you involve your learners with?

SSIT5: Okay. Yes. Uh, as I said, research is not taught as an independent theme. When we do research the research techniques, we integrate them in specific topics. For example, if you are dealing with river studies or river processes in there, you have to teach geographical inquiries that deals with river studies in terms of the, you can be able to measure the width of the stream, stream velocity, the depth of the stream, wetted perimeter. So, in the river study itself, you incorporate these stream measurements as part of research. So, you integrate it into river processes and then the other issue is in coastal processes, we can incorporate pebble surveys, the effect of longshore drift and then you can be able to talk about, the purpose in fact of groins that are there along the Namibian coast. What is its purpose, why are they meant to reduce the effect of a long shore drift and all that? So literally that is what we do, so

these are the themes where you can be able to. So besides, um, coastal studies which we call coastal processes where we do that, and then river processes and also when we are dealing with settlement, talking about urban land use. Like the functional zone of the city and also in Tourism, the effect of tourism on the environment. So, there are a lot of topics where you integrate all of this. And also, the other issue that I nearly forgot is this issue of weather observation, when you are dealing with weather and climate, then you can incorporate that issue of learners gathering data every morning for different weather elements and so forth. And from there on, the learners can be able to present this data that they have collected and then analyse it later and then find conclusions to how on these weather phenomena. So, nearly each and every theme that you find in research is having a point, a particular topic in geography where you can be able to integrate it. So, it's not really taught in isolation from the others.

10. What follow-up activities do you engage learners with after fieldwork activities?

SSIT5: You know the research itself is broad. So, the part of the field literally is for data collection. So, when we're in the field, we literally collect data and then when you get back into class the follow-up activities will be data presentation, where they have to present this data in the form of graphs, they can be pie charts, it can be line graph, bar graph, depending on what exactly you were studying , it can be histograms, any type of chart that people can be able to use and then that will be able to make people to understand the data that has been presented and then from there data presentation is when you know what the analysis. Now we analyse what we see on these graphs to make meaning and to link it to the hypothesis to link it to the end to see if what you've collected really links with what our main purpose of why we went into the field and then eventually we wright our conclusions.

Follow-up question. Do learners do presentations in class?

SSIT5: Yes, immediately after because they do these things in groups. It's not just the whole class doing it at once, so they are doing it in various groups in their all presenting data, in their own respective groups and then one of the group members will be able to present these findings now to the rest of the class. And all the groups will do a cycle i.e. they will follow suite. So that you can be able to make comparison i.e. that we went to do a particular theme, we were focusing on this particular topic. What did this group that was situated at this particular point? How did they fare in their data collection and all that? So, we can be able to compare that. Okay. The group that was situated maybe in the eastern side of this particular shopping centre this is what they encountered, the shoppers that they asked questions and then the group that situated in the centre; the group that was situated in the south, all of that is just to make meaning of different points.

11. Describe what challenges you encounter when teaching fieldwork skills (data collection and field investigations). How can those challenges be overcome?

SSIT5: It is very difficult to get these materials the textbook that is prescribed just contains a skeleton not really something that is extensive. So, you use that one as a point of departure but for you to be able to get into details you really need to do research. That is where you integrate the usage of the Internet to go through there, to obtain more information and then. Besides [the] internet, you can use any other

secondary sources, it can be journals, it can be newspapers, it can be articles, anything that is of importance, of value that is going to aid you in the topic that you are dealing with, so you need to go an extra mile as far as this is concerned because a textbook itself, does not offer much. And the challenges that you encounter are not necessary from the teacher. It's now with the issue of the learners, sometimes they make mistakes when it comes to data collection. How they collect data and normally they get excited most of the time because fieldwork takes them out of their classes so when they get excited, that is a mistake normally comes in. If they have to count for 15 minutes, fine and then the timekeeper will say time-up. Then you will find that some of the learners now sees a very nice car that he likes then he will be able to say “there is no way, I have to count this” by counting beyond the time that is stipulated definitely speaking it’s going to have a negative effect on the data that you’ve collected.

12. Is there anything else that you would like to share at this point?

SSIT5: Well one wouldn’t be able to say there is much to share at this particular juncture, just a mere factor that I think It still goes back to the way in which our curriculums in university is set up. That is where it boils down to that because teachers must be better equipped already from the time that they are in teacher training so that by the time they get into schools, they are already competent enough to be able to handle this part of geography because it is a, it is a theme that is quite a challenge. If you look at the geography results across the country, realize that geography is one subject that many of the learners at the Grade 12 level fail, especially on ordinary level, higher level is not that much of a problem, but at ordinary levels geography is really complex subject because of this particular part of geography that comes into Paper 3. The entire Paper 3, the entire 60 marks is made out of geographical inquiry because there are 2 questions that comes. One will come in the Physical world from that theme, the other one will come from the human part of geography. So, its 30-30 [Marks each]. Then learners already from the onset, they have that in their mind that ‘research is very difficult’ and then it’s this issue of there been told by the people that have been in the system before. So, they are being set to already approaching this part of geography with a negative mindset. With that in mind and the teacher comes now from university, i.e. novice teacher lack of content, lack of methodology and how to deliver. So the combination of the two already creates these learners not to be able to make it in this particular paper. If this particular paper is already out in such a manner that the child would not even be able to achieve. Even the minimum that is required, already that have got a negative impact on the symbols i.e. the overall performance of the child in the subject of geography. So, Paper 3 still remains a very, very big challenge because teachers are not properly trained, they are not even properly equipped. In universities they will teach you the physical part of geography, they will teach you the human part of geography and they will teach you the practical part of geography that they will teach you is Mapwork. So, after these three the inquiry skills are not there, so at the end of the day you have to go out of your way literally for you to do that.

SSIT5: Training like external support over the years, it has been there but the people that have to give this support also, they are the same you are just like in the same boat with them. They lack the understanding, they lack everything. So, you find that

education officers are not competent enough to be able to assist a teacher in schools in order on how to be able to teach this part of geography. I have realised that I have attended many workshops but then they all tried to put away this inquiry-based. So, most of the workshops they are based on other themes of geography. But this research-based, I have attended one whereby they just say ‘you go through previous question papers’ there is no such thing as ‘fine we are going to spend this much resources or this much time’ on trying to improve teachers, to make them competent in teaching this particular theme in geography. So, at the end of the day, normally, they will go to such an extent of using teachers that have been teaching for years to conduct these workshops on their behalf because they themselves are just in the same boat as teachers as far as this part is concerned.

SSIT5: Yes it possess a challenge, the teaching of this part of geography, but then I wouldn't be able to suggest that it must be done away with because it's very, very important because we are preparing learners that's why in the past it used to be geography paper five in the Cambridge era i.e. alternative to coursework, so it puts a child in a way that it sets you for university level to understand how things are done in university , how to go about doing a research because in university one would be required to do a research and then one would be able to be required to complete that research and write a thesis or come up with a dissertation. So, if the learners do not have the required skills already from high school to start, this at university level it is a cumbersome exercise in itself. So, the only suggestion that one can be able to through around here is, I think its high time that people have to revisit. People have to go back again to try by all means to help the teachers at schools. Whether it is in-service training, whatever mechanisms that regions or on national level they can come up with in order to assist teachers in the implementation of this particular theme in geography.

APPENDIX 2A: QUESTIONS FOR TEACHERS FOCUS GROUP DISCUSSIONS

1. Did the teaching of geography through the application of fieldwork help achieve the lesson objectives? Were the learning goals met and was education for sustainable development covered?
2. In what way did teaching through fieldwork provide learners with equal opportunities to lesson knowledge, skills and concepts?
3. Did the fieldwork teaching method possess the potential to empower learners with the knowledge and skills relevant to contribute towards addressing any economic, political and social inequalities that exist in the community or country? Please explain.
4. How did the fieldwork teaching method guide learners to have the knowledge, skills and values to care for and solve the sustainable development issues that may arise in their lifetime?
5. Was the fieldwork teaching method learner-centred? If so, in what way?
6. Based on your interaction with your learners, how relevant was the fieldwork lessons to their learning needs?
7. Did the fieldwork teaching method offer any opportunities for leaners to develop their abilities to cope/adjust to environmental changes that might occur in future?
8. What is your opinion on how teaching fieldwork skills (data collection and field investigations) contributes to the understanding of sustainable development?
9. What is your opinion on how teaching fieldwork skills (data collection and field investigations) contributes to quality teaching and learning?
10. What did you learn from this experience that will help you in future?

APPENDIX 2B: TEACHERS' FOCUS GROUP DISCUSSION TRANSCRIPT

1. Did the teaching of geography through the application of fieldwork help achieve the lesson objectives? Were the learning goals met and was education for sustainable development covered?

FGT1: Yes, most definitely, I feel it really meets the goals from the syllabus and the objectives from the syllabus. The learners now know how to use a questionnaire, they know the differences in the types of questions in the questionnaire how, to approach the respondent when they are asking questions and what to expect to be answered also. In the field one could see they could use that skill i.e. to work with a questionnaire itself. Which is part of the content in the syllabi, then also the other fact is that in general they could also come back and then after using the tool [questionnaire] they could now come back and analyse the data which is part of the research progress or how the research process continues. They could analyse data, it was very interesting how they were analysing data, for example, how this group analysed and presented their data differently from the other group, but you could see the focus in one group compared to the other group and how they differed in their focus but yet one could see that they did understand what their aims were, what their objectives were in the topic given to them and how they showed it onto the posters that they made. In a geographical sense the children's minds were also focused onto their topics i.e. geographical topics that they dealt with. Perhaps I should say 99% really focused on to their topics. They really focused on the topics that were given to them and they could follow the instructions once in the field as well as when they came back to class. They could also explain how they collected and analysed the data themselves in their groups they were divided into and that they could really formulate the final products that they presented.

FGT1: In the sense that learners took learning personal by wanting to stand up themselves and help with development challenges or helping the people or come up with ideas of what can be done with the information they were getting. They even asked me if they could forward the information to the municipality of the city of Windhoek. The learners really lived into what they were doing by interviewing and having contact with the people on the ground. So, they could see the shortages in all the ways all the types of services that we were looking for in the questionnaires. And they could even with the pollution, they could also pick up like what the people are lacking, what the people are using, what methods people are using to dispose waste, things like that. Really the learners acquired knowledge and understanding and they showed how they wanted to help improve the living standards of the people in informal settlements.

FGT2: Just to add on, the lesson objectives were achieved, the lesson objectives relating to going out of class and collecting information using the tools that were at hand, they managed to do that and then the self-conduct it was the respondents I think that was a success as well because we did not… know much…. not much problems were basically experienced and in fact in the end given the initial first-hand experience by learners being in the field even after the field or when they were in the field in terms of just having discussions there….you could see how much they appreciated the

experience that they had in the field from the observations that they encountered. And secondly it also showed that kids understood clearly because there was a systematic continuity from the data collection; analysing what was collected; even coming to presentation or making conclusions and presenting that. Previously, of course we have been teaching but there were rare instances where by people would go in the fieldwork first then from fieldwork you come to class now you incorporate what they experienced in the field now you bring it to a classroom setting. After having done this most problems or mistakes that kids do of 'criss-crossing' objectives of one topic with the other one will be avoided; of course yes few slight incidences were there but the majority portion of the kids now you could see that they stayed focused and; they know the sequence; they could distinguish between different topics and things were clearly self-evidently so. That itself really was of great benefit, so it was a success, yes, the objectives were met.

2. In what way did teaching through fieldwork provide learners with equal opportunities to lesson knowledge, skills and concepts?

FGT1: We totally divided the kids into groups in the field, after dividing them into groups each individual in the group had the chance to interview. So, the questionnaires were spread out such that each individual had a chance to be able to interview residents in the informal settlements but yet they were moving in groups.

FGT2: And adding to that, those groups were gender mixed and both boys and girls went in the field. So, the quality was there of course things were explained to them and they were all told in their groups that they had to go in the field and they collected information so basically no group was assisted beforehand or during the collection of this information. So, briefing was done beforehand to all the groups. All the groups were dispatched and then, they were balanced as far as gender was concerned. Therefore, in that case no group was favoured, no gender type of kids as in boys only or girls only but groups were of mixed gender.

FGT1: And I think also the fact that they could individually go interview i.e. like voice themselves out in the field made them to own the whole learning and feel part of what they were doing in the field; and that, I think made more stronger responses and critical thinking in each of them no one was left out from the learners that were on the field.

3. Did the fieldwork teaching method possess the potential to empower learners with the knowledge and skills relevant to contribute towards addressing any economic, political and social inequalities that exist in the community or country? Please explain.

FGT1: All questions of the topics per questionnaire were definitely based on the social inequalities and on the economic inequalities that the people are facing. I cannot say political but it was more social and economic. Information about social inequalities of people living there was obtained from that. Economical information was also obtained to see the lack of what they are supposed to have to uplift their standards of living; income, yes employment was one of the questions and one could rate and compare from there how many people are really employed there.

FGT2: And I think on the economic aspect, I think kids could observe which of the services were mostly available in some parts [of the informal settlements] compared to the others. In some instance, there was more use of [natural] gas as a source of energy, especially in powering for cooking and quite several gas stalls that were there compared to some of the suburbs that some of the kids are coming from. Some kids would even say "those people are still using firewood" and that attributes to the economic aspects in the sense that kids would think if those people are employed or not.…Are they earning enough income to basically put them in the position to use something better than what they were using? Even the types of homes that were there, they were, majority, generally, the whole atmosphere was more of corrugated iron for both the roof and the walls. So, that gave an indication that people could not afford and they did not earn sufficient income to have permanent structures or brick-walled houses. The social inequality, I think was also observed, this was observed. Especially when learners would come back and you could hear as they were interacting trying to verbally give feedback to each other some would utter things such as "this area is much worse than what we thought was there where we started". So, it gave an indication of them as well picking up these social inequalities i.e. some places people walk much longer distances to go to public water points and these water points are quite very few. While at some other places water points were much closer and they were a bit more compared to other places. So, all these are indications of inequality.

4. How did the fieldwork teaching method guide learners to have the knowledge, skills and values to care for and solve the sustainable development issues that may arise in their lifetime?

FGT2: I think it created a platform for them to pick, to gain knowledge through interviewing these people i.e. the respondents, they were getting various answers given the problems that were there. The respondents would suggest and mention problems that they are experiencing, which these kids could pick up, they internalise and of course that is learning for them. Then equally these kids would also contextualise the responses they were getting from the respondents. They pair that up to what they theoretical learn in class as problems plus looking at the possible solutions of what they would come up during interpretations, analysis possible solutions regarding those problems surely this they are going to internalise and becomes part of their lives which they will definitely use one day when they have grown up in their general lives. I think yes it gave a guide and knowledge, skills plus the values in a sense that kids would sit like I pointed out in the previous question that they would really speak out they own it, they put themselves in the shoes of those people that are around there. You could see that they feel for the people. They would mention things such as "that place that we thought was bad is even better than where we are now, this is not good". Now they would ask us as teachers as to "what do we do now? Where do we go? Do we take this to the constituency office? Do we take it to the municipality?", that gives them a guide and it shows that they feel for those people. And surely, it gives an indication that these people see that something is not right here, there ought to be something to be done to better the lives of the people that they came across in those informal settlements.

6. Was the fieldwork teaching method learner-centred? If so, in what way?

FGT1: The learners are the ones that actually taught themselves what was happening there. The questionnaires were also very clear, straight forward and understandable to the learners. So, they could use them to get the information from the field. No teacher analysed any data at all, it came totally from the learners and it was only the learners that presented. So, it was very much learner-centred, teachers didn't have to do much apart from facilitating and just for control purposes. It was all about the learners going out and gather information and putting it on the papers and then come back to class. So, it was a learner-centred activity that totally took place.

FGT2: The only thing that teachers did here, was the theoretical part of the fieldwork. As well as facilitating and just briefing them [learners] on the general way in which fieldwork is conducted; including preparation of instruments, going out there, how they were supposed to conduct themselves and how they approach respondents. After having gathered information, how they go about analysing it i.e. no teacher sat there and analysed anything, what these kids came to do was to analyse the data and after analysing the data, conclusions were drawn. Presentations were made by learners to the fellow learners. In fact, it was totally learner-cantered.

FGT1: And in the same vein it was peer teaching that was happening as well not just amongst themselves in their groups but through class presentations to other learners who did different topics. They could inform their peers about what they have learned based on the type of information they got from the field and also about how their feelings were, they could communicate all that to other learners.

FGT2: Plus, the most important thing is, each group was basically given an opportunity to basically conduct fieldwork on a certain topic. But however, at the end each group was given an opportunity to make a presentation on that specific topic. So, they were made to sit and make analysis of that topic and they prepared on that which worked out very well, it was well done. Then peer teaching was done as well from different topics by the different learners. So, it was most definitely a very much learner-centred way.

7. Based on your interaction with your learners, how relevant was the fieldwork lessons to their learning needs?

FGT1: Very relevant especially if we go back once again to the syllabus and what is expected of them in the different school examination papers that they are facing. They now know the starting points of fieldwork investigations; they now know and understand the concepts because they were in the field and they saw what they are learning in class. For me their learning needs were addressed because their learning was more open-ended and it was a visual thing i.e. hands-on thing it's not just a theoretical learning process that mostly takes place in a class. So, I think it was really addressing their learning needs.

FGT2: The topics were relevant as well. Plus, the initial relevant topics for geography as a subject as far as fieldwork activities are concerned.

FGT1: Most of the answers after the presentations that one could listen to from the learners were things like… 'environmental changes are caused because of this type of pollution and that type of pollution in informal settlements. One could hear all that

because they learned through their fieldwork experience and they have picked up all that through the lessons and field experiences altogether. For example, they can confidently tell what causes ground pollution in those settlements. So really, they learnt that and they could see it.

8. Did the fieldwork teaching method offer any opportunities for leaners to develop their abilities to cope/adjust to environmental changes that might occur in future?

FGT2: I think as we drove around informal settlements with learners, we could see the effects of erosion although erosion was not part of the fieldwork topics, but as we drove around we could see as we came across places which are on the edges of the cliffs where possible easy erosion is supposed to be taking place and where land is quite scarce. But the barriers were made by people themselves using used tyres so that erosion is basically prevented from the edges of such erfs. Learners picked that up and may have an understanding of how erosion can be minimised.

FGT1: And this was picked up by the learners through observations and they could pick it up and see how people are coping or how people try to put in place strategies on how to adjust to environmental challenges. That I think contributed made learners realise how one can adjust to the given situation or to the environment. For instance, learners might one day find themselves in a situation where land is not enough and erosion is taking place. So, one day someone can sit down and then reason that "Okay! I came across this one day when we were in the field so how can I possible stop this erosion".

9. What is your opinion on how teaching fieldwork skills (data collection and field investigations) contributes to the understanding of sustainable development?

FGT1: My opinion would be, teaching the learners through fieldwork allows them to get in touch with the problems and situations in the field and that makes them to start looking at what the possible solutions towards the problems can be. Learners can start thinking of solutions themselves or they start hearing about how the communities want the problems to be solved or they can eek for solutions from the government also. Fieldwork makes learners understand sustainable development problems and also improve learners to have skills and knowledge to solve sustainable development problems. Kids could pick up such things in the settlements.

FGT2: Just to add on that, I think teaching fieldwork skills that is data collection and then field investigation is beneficial to the learners. As these kids go out there because sustainable development is all about conserving, protecting, restoring of the natural resources that are there so that people's lives would continue. Now as these learners continue go out there collecting information in the field, they will be getting ideas from those people that are out there [in the field]. Through that learners will be able to learn about the experiences of the people in the field and they would also get ides or information from the respondents which learners themselves might not have come across. Through these investigations the kids will better understand how to better use the limited resources that are there because some of the information that one would come across might be that they are basically not going to be from the textbook. So,

through investigations these kids will pick up some of this information and it will contribute to them understanding much better that “development can still continue but however it should be done in a more sustainable manner”.

10. What is your opinion on how teaching fieldwork skills (data collection and field investigations) contributes to quality teaching and learning?

FGT2: It is hands-on-teaching and learning because in the classroom you are going to deliberate on the nature of how one should go about doing fieldwork investigations. You just give the general hints of how you go about investigating i.e. you are going to talk about it and give a frame of what is supposed to be done out there [in the field]. You also talk about the development of the instruments and which instruments to use, how one instrument is better than the other and so on; and then going out in the field becomes an incorporation of theory and practice, that cements theory and practice.

FGIT1: That makes the quality higher because it becomes a lifelong learning thing which a learner will forever remember. It can be in any topic, it could be these topics that the learners went to do investigations about in the informal settlements; it can be a traffic count; it can be a pedestrian count as long as the learner is afforded an opportunity to use the tools that are given for that specific research and goes out into the field and then practice it out.

FGT2: They [learners] would even better understand which instrument would be convenient for what topic or which instrument would best give them information that they might need.

FGT1: The learners learn a lot while being out in the field because they are able to make observation themselves; they see themselves it is something that broadens their views and knowledge on things and on topics that they were not even supposed to look at. It creates new thinking or new knowledge also, they can either come question you as a teacher about certain things or they can make conclusions on certain things they observe in the field.

11. What did you learn from this experience that will help you in future?

FGT1: What I have learned from this experience is that we should keep on having fieldwork with the learners, involve the learners in the field it has shown us once again that it works and that the learners learn a lot. We are expecting high passing rates after this, generally it has shown us the interest that learners have in the subject itself. They want to work with what they are given, and they want do work in groups, they want to contribute towards what they have learnt outside so it makes it totally a learner-centred approach. It is learner-centred because it involves learners participating in learning through the experience that they get. So, I think it’s a good experience for me as a teacher, i.e. to have learners go out in the field and do field investigations; come back and see what they do with the information they got; and see how they present it to their peers or to the teacher and then to come up with their conclusions was a wonderful experience for me as a teacher. They would start understanding the whole investigation process of fieldwork from the beginning where they have to either start with a hypothesis or research objectives or how to concluded it. For me it was a good experience which I will keep and want to maintain and sustain.

FGT2: It was a nice experience because there are three things here that are brought together. Number one you look at the theoretical part. Secondly, the practical part which involves kids learning the theory which they go and practice in the field by going out in the field and do what they are taught in class. Therefore, that gives us a platform of assessing them to find out if they really understand what we explained to them in class. Them being in the field doing things correctly gives us an indication that what we explained to them theoretically was understood because If they do it correctly while they are in the field it is thumbs up. Then it gives you a clear mind that they understand and know what they are doing. Thirdly, once they have gone out in the field and done the research themselves by collecting data; they come back to class and analyse the data and then they present it. That forms part of assessment, but most importantly, as they are presenting this information it forms part of a peer teaching process that basically takes place. It becomes more fascinating and interesting during the time of presentation because you notice and hear how learners make corrections amongst themselves. As a teacher you observe and wait to correct them later but you also notice that if the corrections are going to be coming from the learners themselves then it shows that they know what is right and what is wrong and I think and I think they even learn better.

APPENDIX 2C: LEARNERS' FIELDWORK GROUP QUESTIONNAIRES

Municipal Services Questionnaire

Please answer the questions below as accurately as possible. The results of this questionnaire will be used for study purposes only. Please do not provide your name. Circle or tick the most appropriate answer and complete the rest by filling in.

1. **Gender:** (a) Male (b) Female
2. **What is your age group?**
   (a) 10-15 (b) 16-20 (c) 21-25 (d) 26-30 (e) over 31
3. Where do you live? ……
4. **Employed?**
   (a) Yes (b) No
5. **Does the house get water from the municipality?**
   (a) Yes (b) No (c) Do not know
6. **In which way does your house obtain water for domestic use?**
   (a) Piped water inside the house (b) Piped water inside the yard (c) Piped shared water outside the yard (c) other (specify)……
7. **What type of energy/fuel does your house use for cooking?**
   (a) Electricity (b) Gas (c) Paraffin (d) Wood (d) Coal (e) Solar (f) Other (specify)……..
8. **What type of energy/fuel does your house mainly use for lighting?**
   (a) Electricity (b) Gas (c) Paraffin (d) Candles (e) Solar (f) other (specify)…….
9. **How is the refuse or rubbish from this house mainly disposed of?**
   (a) Removed by municipality (b) Buried (c) Burnt (d) other (specify)……
10. **What is the main type of toilet facility available for use by your household?**
    (a) Flush toilet (b) Dry toilet (c) Pit toilet (d) Bucket toilet system (e) other (specify)……..
11. **What do you suggest the municipality should do to improve the lives of people in your settlement?**

……

……

Pollution Questionnaire

Please answer the questions below as accurately as possible. The results of this questionnaire will be used for study purposes only. Please do not provide your name. Circle or tick the most appropriate answer and complete the rest by filling in.

1. **Gender:** (a) Male (b) Female
2. **What is your age group?**

   (a) 10-15 (b) 16-20 (c) 21-25 (d) 26-30 (e) over 31
3. **Where do you live?** ……
4. **Employment?**

   (a) Yes (b) No
5. **How do you rate your settlement?**

   (a) polluted (b) Not polluted (c) Not sure
6. **Do you experience air pollution where you live?**

   (a) Yes (b) No
7. **If you answered yes to question 6, then how often do you experience bad smells?**

   (a) Every day (b) Every week (c) Every month (d) Sometimes
8. **What do you think is the main cause of the air pollution in your settlement?**

   ……
9. **Which of the following is most common where you live?**

   (a) Air pollution (b) Water pollution (c) Noise pollution (d) Ground pollution (littering)

   (e) other (specify)……..
10. **What do you think is the best solution to the problem you selected in question 9?**

    .....

    .....

    .....
11. **Who in your community is responsible to clean up pollution?**

    (a) Police (b) Government (c) Business (d) other (specify)…….

Social Services and Facilities Questionnaire

Please answer the questions below as accurately as possible. The results of this questionnaire will be used for study purposes only. Please do not provide your name. Circle or tick the most appropriate answer and complete the rest by filling in.

1. **Gender:** (a) Male (b) Female
2. **What is your age group?**

   (a) 10-15 (b) 16-20 (c) 21-25 (d) 26-30 (e) over 31
3. **Where do you live?** ……
4. **Employment?**

   (a) Yes (b) No
5. **Are there any health facilities (hospital, clinic) in your area (informal settlement)?**

   (a) Yes (b) No
6. **What is the primary/main source of medical service available to people in your home?**

   (a) Hospital (government) (b) Clinic (private) (c) Hospital (private) (c) Private doctor (d) other (specify)……
7. **What type of transport do you use to the health facility (hospital, clinic, private doctor)?**

   (a) Walking (b) Taxi (c) Bus (d) Own transport (d) other (specify)……..
8. **How long do you take to travel to the health facility (hospital, clinic, private doctor)?**

   (a) Less than 15 minutes (b) 15-30 minutes (c) More than 30 minutes
9. **How satisfied are you with the government's provision of the following facilities in your settlement?**

	Very Good	**Fair**	**Poor**
Public schools (primary and secondary			
Markets			
Police stations			
Public health facilities (clinics			
Roads			
Street lights			
Shops			
Playgrounds for children			

10. **What three (3) main facilities would you like the government to bring to your settlements that are currently not available?**

    (a)…… (b)…… (c)……..

APPENDIX 2D: TRANSRIPTS OF FOLLOW-UP TO FIELDWORK ACTIVITIES (CLASSROOM PRESENTATIONS BY LEARNERS) LGWP1-LGWP3

LGWP1: Good morning! This is our presentation on what we have discovered as we visited the three locations i.e. Havana, Okahandja park and Hakahana. We discovered that the medical services in the three settlements is lacking, most medical services are lacking, especially in Hakahana. Plus, they have to walk long distances as you can see here on the pie chart, they have to walk long distances to go to the hospitals and clinics for medical services as you can see, they mostly walk to go and get medical services. For the Hakahana settlement, they actually also have the highest rate of a lack of medical services. Since they also struggle like the rest, they also walk long distances, it's also the same rate as the Okahandja Park settlement. So, they have to walk all the way to go to the medical services which are located in Wanaheda (i.e. a residential area in Windhoek). And then we go to Havana settlement, Havana actually has least demand for medical services, actually they have a clinic in Havana and the people normally walk and go to Wanaheda for hospitals because Wanaheda is near the Havana informal settlement. The main facilities wanted by people in the three settlements that we have visited is electricity because most of them find it hard because they don't have electricity at home. They use candles which sometimes becomes dangerous it can also burn their Shacks. Many of them [the residents] don't have electricity and use gas, paraffin and those things which are also pretty dangerous for their houses. And then we go for Police stations, they said Police stations are really far from where they live except for Havana settlement. People in Havana use the Ombili [i.e. a residential area near Havana] police station because it is near Havana. Many of the people especially in Hakahana and Okahandja park complained about having less shops in the settlements. In Havana they did not complain much about the shops because there is Wanaheda and Ombili nearby and they use shops there.

LGWP2: The question that was asked to most people that were there was "What do you suggest the Municipality should do to improve the lives of people in your settlement?". Most of the answers that we got were "More toilets are needed; rubbish bins as people tend to burn objects causing air pollution". Then we have "Provide electricity; increase the number of toilets and clinics; they should bring water closer so that we do not walk long distances in order to collect water; and clinic should be available because a lot of people get sick". And they should make lights available for people around the settlements so that they do not use paraffin and candles; the municipality should build up water toilets so that they don't have to pollute the ground area with their faeces; and more taps close to their houses and they should provide bins in order not to burn and cause air pollution. And that is the conclusion of our poster.

LGWP3: We had to do a survey on municipal services and our first objective was to present data for all the type of energy or fuel used for cooking in each settlement. The three settlements that we had were Hakahana, Havana and Okahandja park. I will start with Havana informal settlement, in Havana the type of energy sources used are mostly wood and electricity. A large percentage of these people in the Havana informal settlement use mostly wood which we feel is also a disadvantage because the more they are using wood the more it leads to deforestation. The people also use illegal electricity i.e. so they use extension cords to get electricity from one place to another,

which is illegal and dangerous. And the second settlement was Okahandja Park. Again, the same just as Havana, a large percentage of the people in Okahandja Park use wood and 40% uses electricity which is also illegal. And then the last settlement is Hakahana. Majority of the people in Hakahana use gas. Now the disadvantage of using gas is that it may lead to fires and explosions. An advantage of using gas for them I feel is because of their conditions, is that it is in bulk supply meaning they can get gas in large quantities. And majority of these people are not employed so this would be the easiest solution to them. Our second objective was to present data for the most energy used for each settlement. Again, we looked at all three settlements which was Havana, Hakahana and Okahandja Park. In Havana I would say 1% of the people use electricity and in Hakahana almost 70% of these people use candles. Candles are cheap for these people to buy so they can afford to use candles and there are also no electric lines that side so candles are their option. In Okahandja park they also mostly use candles. Our last objective was to find out and present data for the main type of toilet facility used. Again, we looked at all 3 settlements and we found out that in Havana the people mostly use public toilets. I remember when we conducted this whole survey, we interviewed someone and we did see that there were only 2 public toilets in this area this is very unhygienic, and health wise, it's not good for these people because using one toilet or only having 2 public toilets in such a huge area with so many people is unhygienic. Let's not forget that these places are also very populated and the reason why these people decide to settle in those areas is because the land is cheaper there. They cannot afford land in the suburbs or in other expensive side of Windhoek. So, they decide to settle there and they have no other option because the land is cheaper there. They are able to build their settlements there so they only have 2 public toilets. And then in Hakahana, they use dry toilets, now a dry toilet is a toilet that has a hole in the ground it doesn't have flushing water. Do you know how unhygienic that is? In Hakahana almost 80% of these people use dry toilets. The last settlement we looked at was Okahandja park. Now in Okahandja park I would say 50% of those people use the bucket system. Now the bucket system is the system used where people defecate in a bucket or plastic bag and then burn it or get rid of it in some sort of way. Now this is also bad. And then 50% or around about 60% of these people use dry toilets (I already explained the dry toilet system). Now just to go back to the lighting again, because there is no electricity there in most of these places or the settlements we investigated. The crime rate is very high if you are in an area where there is no electricity, you are in an area where shacks are built very close to one another. Look at how the house are [pointing to the picture on the poster] there is no electricity. So, you would expect the crime rate to be more because if there is no electricity someone decides to for instance steal from someone in the middle of the night 'How would you know who it is if there is no light? Would you walk around with the candle to go look for the person? No. And then also studying let's not forget 'education is the biggest equaliser' so for these kids that live in such settlements it's very difficult for them to study with a candle so "How will they improve their education if they do not have electricity and only use candles?" And then for the toilets I already spoke about that. Although it is not part of our objectives, let's talk about the diseases, these areas or I would say Havana and Okahandja park are prone to diseases and infections. There are no health facilities there, so imagine, these people are living in poverty, their area is prone to diseases and they are no health facilities. They do not have money "How will they survive? How will they take care of themselves?". And LGWP4 will talk about the solutions.

APPENDIX 3A: QUESTIONS FOR LEARNERS' FOCUS GROUPS

1. What issue did you investigate during the fieldwork? And what did you learn about the issue? (How it started and whom it affects).
2. What are the reasons why everyone participated or did not participate in the fieldwork activities in your group?
3. Describe what sources of information you used and how such sources of information helped you learn more about the issue that you investigated?
4. What practical solutions did you learn/develop during the fieldwork learning activities that can be applied at the community level in order to address some of the problems that you identified?
5. In your opinion, how can the problems that you identified be solved or reduced in future?
6. Did you like or not like searching for your own information? Please elaborate.
7. How did you find working in groups?
8. What did you like or not like about the fieldwork activities?
9. Explain how you benefited from the fieldwork learning experience?

Thank you for your time and participation

APPENDIX 3B: SAMPLE OF LEARNERS' FOCUS GROUP TRANSCRIPT

1. What issue/topic did you investigate during the fieldwork? And what did you learn about the issue? (How it started and whom it affects).

FGDL7: As for my group during the fieldwork we investigated pollution and how it affects the community in the informal settlements. Air pollution is common there because of poor sanitation and the air smell badly in most places because people use bushes as their toilets and they also burn their rubbish, that was what our group was mainly focusing on during the fieldwork.

FGDL8: We were also working on pollution in the informal settlements and we got to know how things are in those informal settlements and how the people cope with many challenges. When we interviewed them, they were telling us that they are trying so hard to survive without the government's help they were interested in sharing their information with us because they thought that might help them in the future. It also contributed to the study of geography to us to learn more how things are there, to learn about the pollution happening there.

FGDL9: We focused on municipal services whereby we looked at the type of energy people use there and if they have water or not, most houses did not really have water nearby and people have to walk a few Kilometres to get water. When we looked at the sources of energy they use, most of them use wood which contributed to air pollution and also some of the people use gas to cook their food. They do not have electricity for lighting their houses and they only use candles but then they also told us that sometimes accidents do happen with candles in some houses and that causes fires.

FGDL10: We also got to find out that majority of those people are unemployed, majority of the residents that live in those particular settlement they are unemployed which also contributed to the reason why they are living there. The settlements where they live weren't really of high standard, they were of low living standard. The topic we got was pollution, we also got to understand that majority of those residents want the government to actually help them out with their problems for instance the ground pollution, the littering and all that. They said that in one settlement where we were, I think it was Havana the community or the households have groups that are responsible for cleaning up the area. But another settlement I think it was Hakahana, the residents there depend on the government to provide them with dustbins or plastic bags for cleaning up the waste.

FGDL11: Many people in the informal settlements go through so many hardships such as pollution and they don't have good sanitation causing them to get sick and diseases to spread very easily. They don't have electricity, so they use candles and wood for cooking which can cause fire sometimes and it is very difficult for firefighters to go to those locations because it's very far from the city. Those informal settlements are also very dirty.

FGDL12: We focused our investigation on social services in informal settlements. They don't have many services in those areas.

2. What are the reasons why everyone participated or did not participate in the fieldwork activities in your group?

FGDL7-FGDL11: We all participated in interviewing people and we also made observations.

3. Describe what sources of information you used and how such sources of information helped you learn more about the issue that you investigated?

FGDL7-FGDL11: Questionnaires and interviews and the visual (observations)

4. What practical solutions did you learn/develop during the fieldwork learning activities that can be applied at the community level in order to address some of the problems that you identified?

FGDL7: It could be better to start with putting electricity in the Havana informal settlement, the residents were mainly complaining about a lack of electricity. They were saying that there are no street lights there and the place gets dark at night and that contributes to crime there. Those people can also be provided with toilets because most of them use bushes to relieve themselves. In Okahandja park, I think those people there were seeking toilets because some residents use plastic bags to dispose their human waste and they also want taps because some of them said they go and collect water far away from their houses. Some people we interviewed for example said that about 50 houses just have like 2 public taps, so they were seeking more taps like each house with its own tap.

FGDL8: Since there is a lot of pollution in those areas, I think medical facilities have to be brought closer to them because it is really hard for those people to survive. They have to travel long distances to go to places for medical aid and it is from those settlements where most diseases are occurring. The people in those settlements want medical facilities and police stations because crime there is also high.

FGDL9: I just want to comment and say that those areas need electricity and those people must also build their shacks in rows.

FGDL10: The people in Havana area should be provided with land, because I think some of the residents said that they are illegally there.

FGDL11: Adding to the pollution and mainly to the ground pollution situation, I think it will be better if people in informal settlements can make up groups in the community to have community service like cleaning waste in their community. The government can then provide them with the black plastic bags so that they can put in their litter in order for people from the municipality to collect it to the disposal area. That way the settlement will be clean and diseases will not likely be caused that side.

5. In your opinion, how can the problems that you identified be solved or reduced in future?

FGDL7: The problems can be reduced if everyone gets educated in the informal

settlements. For example, if those kids that live in informal settlements all get educated, they could get their parents out of there and maybe move somewhere closer to hospitals and have a better living place. I think it is just education that will prevent those informal settlements.

FGDL8: If rural areas can be developed people won't have to come to Windhoek looking for job opportunities, then they won't have to move to informal settlements.

6. What will help you remember what you learned during the fieldwork investigations?

FGDL7: For the settlement of Havana, definitely the way the shacks are built. In that settlement, I don't think there is privacy because the shacks are built very close together. So, there is no privacy there at all, one can see just by looking at the way the houses are.

FGDL8: I will not forget because of how the interviews went. I still remember how some people were not really comfortable, or how they don't want to live that lifestyle. No one will want to live in places like that.

FGDL9: When people tell you about problems happening in the informal settlements you will not really believe it or take it seriously. But seeing it for yourself like in fieldwork, it makes you understand it better and if you relate to it, it even makes you understand it even better.

7. How did you find working in groups?

FGDL7: Working in groups made people more confident because when you are working with others, they help you where you do not actually understand how to explain things to other people like when you are doing interviews. The other people in your group can come in and help you.

FGDL8: It also helps with the language, for example, let's say you don't speak a certain language that your interviewee speaks. Then your partner can translate to you in that language you don't speak.

FGDL9: And then the other thing it can also be protection because you can't interview these people alone some of them are so desperate and they could maybe attack you or anything. So, when you are in a group its better than being alone when it comes to defending yourself or something.

FGDL10: Working in groups makes work easier because there might be a part that you might not understand which your partner understands. So, your partner can basically just quickly explain to you and that makes work easier in my opinion.

FGDL11: For me as a learner, it helped me build my teamwork skills. I think those are the skills I can use even after high school not only here in high school.

FGDL12: Working in a team helps a lot because one person can ask a question when you are interviewing someone and another team member can record the information

in order to help each other.

8. What did you like or not like about the fieldwork activities?

FGDL7: Just the general experience it was really nice, I do appreciate the effort that was put into the whole exercise.

FGDL8: When we went out there what was heart-breaking was the fact that you would see people when you interview them it's like they want to cry, which was heart-breaking. What I did not like is the fact that the places we visited were mostly dirty and just full of crime.

FGDL9: What I like about this fieldwork was that it was an eye opener, meaning that if one wants to be successful, one need education. This kind of fieldwork can be used to motivate learners because some learners need to see those kinds of settlements and experience how life is after school without education.

9. Explain how you benefited from the fieldwork learning experience?

FGDL7: For me personally, it motivated me to make sure that I study harder to avoid such situations in the future and also motivate other people from what I saw to prevent it from happening to the future generation.

FGDL8: Fieldwork is part of our paper 3 exams, so seeing that and experiencing it for myself, it will make me not forget what I have learned.

FGDL9: It also showed me that our country is really still developing, there is still a very big gap for Namibia to develop. I also saw that majority of those people depend on the government. A lot of them only want the government to do something for them. But the question that I have is, what can they do?

10. Are there any other comments or suggestions you would like to make before we end?

FGDL7: I think that fieldwork is a very beautiful experience, just learning things in class without really seeing doesn't really give you general knowledge about something, but seeing for yourself does.

FGDL8: I think from my experience this fieldwork is very important and I think that it should be taken into consideration. The records that we have taken down, I think we should send them to the government so that we can see how the government feel about it.

FGDL9: I would like to say that the higher authorities like the government, the president and ministers should also take some time and visit such places. I don't believe they do visit such places and see for themselves how the Namibian nation is living.

FGDL10: From my point of view as a learner, I think it was also something good because there are some learners who are strong and who are weak in the classroom.

The weak learners could build their learning experience outside the classroom, so being outside the classroom also helped other learners who aren't really strong in the classroom to understand certain parts of the topic in a practical way.

FGDL12: I think it's better if the people that side especially the children that still go to school take their education seriously. They should make use of free education that we have now in the country by taking advantage of the fact that we have free education. In order for them to benefit from education and have a better life and not to stay in such areas because that area like Havana is not an area for humans...not at all because a person is not supposed to live like that in those conditions.

FGDL11: I think that they should make fieldwork something that is regular, like for it to be done more often.

APPENDIX 4: ANALYTICAL MEMORANDUM 1: GEOGRAPHY TEACHERS' UNDERSTANDING AND APPLICATION OF GEOGRAPHICAL FIELDWORK AS A TEACHING METHOD (DATA GENERATED FROM PHASE 1: SEMI-STRUCTURED INTERVIEWS)

Theme	Responses	Data Source
Teachers' understanding of geographical fieldwork as a teaching method	Going into the field basically! It's basically the physical, the physical application of the subject that's short to the point.	SSIT1
	Geographical fieldwork, my understanding is when you physically go out in the field there to do research like we are doing for alternative to coursework… and…. geographical fieldwork is, if you take your learners out to do pedestrian counting, traffic counting, so that is to take them physically out in the field and do the research. To take them to the river, the beach physically out there to make their own survey to be part of their own survey. To come to their conclusion of their own survey after they have experience it themselves by using the instruments in the field.	SSIT2 SSIT3
	As a teaching method it's actually a very good field itself. Because now the child is on the ground is doing himself, herself the inquiry, the investigation and with that will learn better because 'when you see something when you touch something it's more rememberable than you only hear about something'.	SSIT4
	Geographical fieldwork for me would mean of course as a subject geography gets taught in class but there are/[is a] part of content which is taught in class which basically requires them to be out there in nature so that they carry out investigations and work with investigation, collect information basically and then analyse information that they get make conclusions and recommendations if need be.	SSIT5

	My understanding of geographical fieldwork, we are talking about the paper three, which is called alternative to coursework. In order to prepare thoroughly for such a paper, we need to undertake what we call geographical research or inquiry-based type of studies, where you need to get into the field and gather data after gathering the data, analysing it. You do presentation, data analysis and then you conclude and then during that you have now to refer back to the purpose of why you went into the field. What is it that we're trying to get at the hypothesis and all that, so that's geographical inquiry doing something that is out of the theoretical realm of education, doing it in a practical way That is geographical fieldwork. But then it encompasses a lot of topics in itself there is human geography part of geography, there is a physical part of geography so either way that is geographical fieldwork. Right. We do fieldwork. I understand this is a very great part because geography is mostly about [the] environment. Our water, energy, the minerals, and all this stuff. It all has to do with the land and the environment we are living in. So, we really need to do more fieldwork for, to bring the reality of the classroom to the learners, and for them to have a better perspective even of addressing questions when it comes to the exams.	SSIT6
Geography topics/themes with which teachers integrate fieldwork (i.e. data collection and field investigations) with in their teaching.	**Description of fieldwork activities done within geography themes/topics done**	**Data Source**
Agriculture		SSIT1
Beach studies	So, if you have, say a smaller group it's easy to take them out but we are planning for example a trip to Swakopmund to the beach but now we must work out a route, along the way where they can visit some of the you know parts of the environment to see. Say where erosion have taken	SSIT2

	place, a look at some rocks, shapes of rocks and then maybe end. The last part will be say, in Swakopmund [a coastal town in Namibia] where they can do the beach studies then obviously we can do then, data collection if you have the instruments the equipment you teach the learners how to use the equipment and if you have your data collection how now to sit and evaluate the data that you have collected and to come to conclusion of your investigation.	
Industrialisation		SSIT1
Population		SSIT1
River studies	You know normally we have no water, say if I do river studies, I have no river but I normally would take them [i.e. learners] to a river just to see that we would do maybe pebble studies or we would do slope profiles, river profiles those type of things although we can't do anything with speed of flow of those types of things, really we do not have rivers in Windhoek that has water or that is running. So, I normally would take them there basically this Avis rivers a small part or we will see the meandering show them those type of things. We are not doing it regularly but, I know 2 years back I was taking a group to the river nearby and we did but it was only my higher-level group it was 12 learners. So, it's easy to go to manage a small group and then we went there and then you can teach them or you show them how to measure the depth of the river how to measure the width of the river how to collect samples out of the depth.	SSIT1 SSIT2
Settlement studies	We are more into… We have a topic on settlement studies, so we do a bit of research on the quality of environment, observations and all these things.	SSIT6
Shopping surveys	I will take them out say to a shopping mall where they can do the questionnaire part, to ask questions to shoppers visiting the mall.	SSIT2 SSIT5

	Then the other issue is the issue of shopping survey in order to classify everything according to shopping habits of customers at a particular shopping centre. They [learners] are going to be classified in groups to ask shoppers that come to that shop certain questions that we set up before we undertake this fieldwork exercise and then we normally do what we call a trial survey or a pilot study. So, we go and test the questions that we have on our questionnaires a day before we go for the actual study in order for us to determine if the questions are appropriate, are they relevant and all that. Most of the time when we do shopping counts or shopping surveys, we are looking at the shopping habits or how long do people spend in particular shopping centre, how far did they travel to get to the shopping centre, what type of goods? Is it high order goods? or low order goods that they came for? and what mode of transport they used to get there.	
Tourism		SSIT5
Traffic and pedestrian counts	I will for example under settlement studies to do the traffic counting or the pedestrian counting where you can take them out in the street you know that is easier because you work with questionnaires and teach them to observe. to do observation and at the end use that information for conclusion. It all depends to the topic at hand for example, if we have to do what we call traffic counts. Traffic counts we normally do, at intersections of robots [traffic lights] at an intersection of a particular street and then you classify learners in groups. One group will be standing on the other side of the road in order for them to count traffic moving in a particular direction and then another group will be counting in a particular direction, so that in itself is one example that we use and then in there learners have prepare equipment such as the clipboards, recording sheets, pens, umbrellas, depending on the weather because the weather have to be taken into	SSIT2 SSIT5

	account when you are doing this type of fieldwork. So, we do that normally at places that are nearby the school. So, in order to cut on the transport costs and everything else becomes easier with the movement to and from the place where you do the fieldwork itself and then data is collected by means of a on this recording sheet, you record data. The number of cars depending on what is really the hypothesis that you're trying to prove at the end of the day.	
Urban land uses		SSIT5
Weather studies climatology	Weather is very easy you can take them to the meteorological station so that at least they can just see the instruments, you can't have access to the instruments, but you see a normal thermometer everybody knows because they do it in physical science so rain-gauge maybe those type of things so you do take them outside or let them see this is the type of clouds, explain the whole Coriolis effect cased like that and stand outside and do those practical things so that they just experience it. Last year we took them to the weather bureau. Where they could go see the instruments itself i.e. how it works.	SSIT1 SSIT3
Follow-up classroom activities that teachers engage learners with after fieldwork activities	**Description of follow-up class activities**	**Data source**
	Then they must basically now formulate the information, that they have collected, when they formulate the information then they must present the information, and when they present that's normally where we talk and I explain a little bit where [they went wrong]… why can't this [be] do[ne]..then it is the active part where you fully engage [learners]…. where you let the child be basically the master of what he has collected in a sense. That child must start putting the information on a pie chart The follow-up activities will obviously be then to make sure that they [learners]	SSIT1 SSIT2

	have what they have observed, what was the conclusion? what can be done next time? what can be improved? For example, in the survey What can you change about the question this question did not work for example. So, follow-up activity, say if you conclude now and you change some information then you can try to follow up the same type of activity with changes that you have made and to see how the results will look then at the end the changes that you have brought in.	SSIT3
	You definitely have to test them what they have learned out in the field.	SSIT4
	So now you have to test the remembrance of what have you learned in the class because when they are going to write the examination paper that will be a total testing of what they have learned in the field. So, we use test, question papers, exam question papers, practical exercises that you can have, assignments you can give out, just to get the feedback of what the learners have learned i.e. assess them. We go back to the requirements of the curriculum i.e. what is it that these kids must know, they should master. So, they come back, we test them and that's how we assess and see. Did we really come to par? Did we come close? How much of our kids really mastered? And then where it lacks, yes you drill them here and there. And that's how we go about it after the fieldwork.	SSIT5
	You know the research itself is broad. So, the part of the field literally is for data collection. So, when we're in the field, we literally collect data and then when you get back into class the follow-up activities will be data presentation, where they have to present this data in the form of graphs, they can be pie charts, it can be line graph, bar graph, depending on what exactly you were studying , it can be histograms, any type of chart that people can be able to use and then that will be able to make people to understand the data that has	

	been presented and then from there data presentation is when you know what the analysis. Now we analyse what we see on these graphs to make meaning and to link it to the hypothesis to link it to the end to see if what you've collected really links with what our main purpose of why we went into the field and then eventually we wright our conclusions. They write reports. And they present their findings.	SSIT6
Factors enabling or constraining the application of geographical fieldwork as a teaching method by geography teachers.	**Teachers' views**	**Data source**
	Measuring instruments is the first one, we don't have the instruments, we can't afford the instruments, nobody wants to donate the instruments. Then normally like I gave an example with river studies, you don't have a river with water, you see. It is [also] very difficult for me to do beach studies, unless I go to Swakopmund [i.e. a coastal town in Namibia]. So, the instruments, [and] the geographical site [s] are the main factors. But I know in Geography the biggest problem is we do not have the instruments, I can't teach the child because visuality is very important, if a child sees the instrument and the instrument we work on the instrument and he understands why an air pressure, barometer goes up and down, up and down, experience it, he does understand better and he applies better and the interest is there. Now Geography we don't have the things so how can I expect them to became more interested in the subject of geography? because for me geography is a practical subject it is much practically-oriented but we are curbed by not having a laboratory. I can't teach rocks because I can't show them [learners] what an igneous rock is because I don't have a granite for instance at school those type of things. It's one of the biggest challenges for schools I think, we can't go out on	SSIT1

	fieldwork some schools don't even have transport do you see. I can't go to a shanty town for instance, then safety is number one i.e. a parent will kill me about safety… there are so many aspects.	SSIT2
	Finances, can be a challenge; transport can be a challenge. Like I said, the trip that say we are planning you must plan it long time and well in advance to try then to overcome that challenges, you know to get funds available in our government schools we don't have a lot of money available to do that [fieldwork] so obviously funds must be raised. And the groups its big groups [large class size i.e. number of learners]. We can't do river studies because we don't have a river that is continuously flowing to monitor i.e. test the water pH balance.	SSIT3
	There are so many challenges that you really do find when you are out taking the kids. So, if I can name one of them its transport for instance., when you are at a school where you don't have transport to move the kids to the coast for instance or maybe just from one area to the other area in the research itself. But then you also find that the instruments that one should use [during fieldwork are difficult to get hold of] …. [if] you take [learners] to the river for instance you need things like stopwatches, you need measuring tapes etc.	SSIT5
	It is very difficult to get these materials, the textbook that is prescribed just contains a skeleton not really something that is extensive. So, you use that one as a point of departure but for you to be able to get into details you really need to do research. That is where you integrate the usage of the Internet to go through there, to obtain more information and then. Besides [the] internet, you can use any other secondary sources, it can be journals, it can be newspapers, it can be articles, anything that is of importance, of value that is going to aid you in the topic that you are	

	dealing with, so you need to go an extra mile as far as this is concerned because a textbook itself, does not offer much. And the challenges that you encounter are not necessary from the teacher. It's now with the issue of the learners, sometimes they make mistakes when it comes to data collection. How they collect data and normally they get excited most of the time because fieldwork takes them out of their classes so when such they get excited, that is a mistake normally comes in. Number one! Insufficient equipment, as I said, like when it comes to river studies, we need equipment as flow meters. We need the equipment such as quadrants. We need a measuring tape. Such materials are not easy to find some. Most of them are very expensive for our schools to really get them. A second challenge is transport because I have a very large group. I have more or less around 120 learners doing geography. You really need more in terms of transport and equipment and planning. It is a challenge. What we do now to overcome such a [challenge] at times we collaborate with other schools, then we go to the sites together and share the equipment that we have. That's the only way we are doing it now because there's just no other way.	SSIT6
Geography teachers' self-perceived competencies to teach geographical fieldwork (data collection and field investigations)	**Teachers' views**	**Source of data**
	I don't really have a choice! I just got training as a facilitator of Paper 3, but I believe every teacher or every person even if you have mastered you learn things every day because number 1 our generation is changing i.e. we have the millennium child so what you were taught you always need to reinforce or change and apply with different methods. Now sometimes the latest methods are not being given via workshop or training and that sometimes hamper the job of the	SSIT1

	teachers, a lot of teachers are not equipped to teach fieldwork because they were never work-shopped they never attended workshops. I know in this region or in Windhoek we attended fieldwork workshops a few teachers it was not all teachers.	SSIT2
	Competent in the sense that, I can teach the [learners] in the class but maybe not that competent to be out there in the field with them i.e. practical. And our biggest problem is if you have the equipment you know then I think one can be more competent to do to make use of that equipment to teach and show the learners precisely. But I think it is easy, it is just that, I will not say that I am very much confident but I am able to do it even if I get hold of the instruments then I believe I will be able to do it.	SSIT5
	The competency! One is competent enough because it boils down to experience in teacher training, we are not literally taught how to teach geographical inquiries. So, they even make it clear in the syllabus that many teachers, or if not all teachers in Namibia, they are not yet competent in the teaching of this particular theme in geography. Therefore, it boils down to experience. So, in the earlier years of teaching, one was not really that competent especially with how to go about in formulating hypothesis, to go about with the data collection methods, to go about the presentation and so forth, but as the years went, one has to do what we call reflections i.e. What is it that I did last year? What was wrong? What can I see improving? So, as years went by, as I have said I've been teaching for so many years now, so one is competent enough and teach geographical inquiries, any day, any time provided the time allows or time permits.	SSIT6
	I might say moderate because we are mostly challenged by the [lack of] materials.	

APPENDIX 5: ANALYTICAL MEMORANDUM 2: ANALYTICAL FRAMEWORK IN USE FOR ANALYSING HOW EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) CONTRIBUTES TO QUALITY EDUCATION.

Analytical categories of quality and central concern	Evidence/indicators	Source of Data
Effectiveness: The impact of education at all levels…the extent to which educational goals are achieved.	The learners now know how to use a questionnaire, they know the differences in the types of questioning in the questionnaire how to approach the respondent when they are asking questions and what to expect to be answered also. In the field one could see they could use that skill i.e. to work with a questionnaire itself. Which is part of the content in the syllabus, then also the other fact is that in general they could also come back and then after using the tool [questionnaire] they could now come back and analyse the data which is part of the research progress or how the research process continues. They could analyse data, it was very interesting how they were analysing data, for example, how this group analysed and presented their data differently from the other group, but you could see the focus in one group compared to the other group and how they differed in their focus but yet one could see that they did understand what their aims were, what their objectives were in the topic given to them and how they showed it onto the posters that they made.	FGT1
	The lesson objectives were achieved; the lesson objectives relating to going out of class and collecting information using the tools that were at hand, they [learners] managed to do that… And secondly it also showed that kids understood clearly because there was a systematic continuity from the data collection; analysing what was collected; even coming to presentation or making conclusions and presenting that.	FGT2
	The learners are the ones that actually taught themselves what was happening there. The questionnaires were also very clear, straight forward and understandable to the learners. So, they could use them to get the information from the field. So, it was very much learner-centred, teachers didn't have to do anything it was all about the learners going out and gather information put it on the papers and then come back to class. So, it was a learner-centred activity that totally took place.	FGT1
	The only thing that teachers did here, was the theoretical part of the fieldwork. As well as facilitating and just briefing them [learners] on the general way in which fieldwork is conducted; including preparation of	FGT2

	instruments, going out there, how they were supposed to conduct themselves and how they approach respondents. After having gathered information, how they go about analysing it i.e. no teacher sat there and analysed anything, what these kids came to do was to analyse the data and after analysing the data, conclusions were drawn. Presentations were made by learners to the fellow learners. In fact, it was totally learner-cantered.	
	Fieldwork is part of our Paper 3 exams, so seeing that and experiencing it for myself, it will make me not forget what I have learned.	FGDL8
	This will really help us for Paper 3 exams because we have experienced what is actually going on. We will be able to answer the questions well because we can actually relate to those places.	FGDL16
	We had to do a survey on municipal services and our first objective was to present data for all the type of energy or fuel used for cooking in each settlement.	LGWP3
Efficiency: The maximising of resource use.	The lessons were taught as planned and they covered the teaching and learning content as outlined in the lesson plans.	FN
	The application of geographical fieldwork teaching and learning activities was successful because they were planned prior to implementation.	FN
	Learners were able to understand and apply concepts such as interviewing, observations, data analysis, data presentation as well as communicating results of their investigations. They also engaged with other learning processes such as engaging with fellow learners through consultation and working in groups as well as engage with community members in order to enhance their learning experiences.	FN
	What I have learned from this experience is that we should keep on having fieldwork with the learners, i.e. involve the learners in the field, it has shown us once again that it works and that the learners learn a lot. We are expecting high passing rates after this, generally it has shown us the interest that learners have in the subject itself.	FGT1
	It was a nice experience because there are three things here that are brought together. Number one you look at the theoretical part. Secondly, the practical part which involves kids learning the theory which they go and practice in the field by going out in the field and do what they are taught in class. Therefore, that gives us a platform of assessing them to find out if they really understand what we explained to them in class. Them	FGT2

	being in the field doing things correctly gives us an indication that what we explained to them theoretically was understood because If they do it correctly while they are in the field it is thumbs up. Then it gives you a clear mind that they understand and know what they are doing. Thirdly, once they have gone out in the field and done the research themselves by collecting data; they come back to class and analyse the data and then they present it. That forms part of assessment, but most importantly, as they are presenting this information it forms part of a peer teaching process that basically takes place. In a geographical sense the children's minds were also focused onto their topics i.e. geographical topics that they dealt with. Perhaps I should say 99% really focused on to their topics. They really focused on the topics that were given to them and they could follow the instructions once in the field as well as when they came back to class. They could also explain how they collected and analysed the data themselves in their groups they were divided into and that they could really formulate the final products that they presented.	 FGT1
Equity: The contribution of education to increasing or decreasing social justice. i.e. issues of access to education for all people regardless of gender, ethnicity, disability, sexual orientation, etc.	We totally divided the kids into groups in the field, after dividing them into groups each individual in the group had the chance to interview. So, the questionnaires were spread out such that each individual had a chance to be able to interview residents in the informal settlements but yet they were moving in groups. those groups were gender mixed and both boys and girls went in the field…. All the groups were dispatched and then, they were balanced as far as gender was concerned. Therefore, in that case no group was favoured, no gender type of kids as in boys only or girls only but groups were of mixed gender…. And I think also the fact that they could individually go interview i.e. like voice themselves out in the field made them to own the whole learning and feel part of what they were doing in the field; and that, I think made more stronger responses and critical thinking in each of them, no one was left out from the learners that were on the field. All learners participated in group activities, including girls and boys. Both girls and boys took part in interviewing the residents in all three informal settlements. We all participated in interviewing people and we also made observations Working in a team helps a lot because one person can ask a question when you are interviewing someone and	FGT1 FGT2 FN FN FGDL7-FGDL11 FGDL12

	another team member can record the information in order to help each other.	
Responsiveness: The recognition of individuality and response to efforts to 'become oneself' i.e. meeting the needs of the individual learners in classroom interactions by taking into consideration the uniqueness of the learner's abilities. The capacity of the system to respond to individual differences.	The learners are the ones that actually taught themselves what was happening there. The questionnaires were also very clear, straight forward and understandable to the learners. So, they could use them to get the information from the field. So, it was very much learner-centred, teachers didn't have to do anything it was all about the learners going out and gather information put it on the papers and then come back to class. So, it was a learner-centred activity that totally took place. The only thing that teachers did here, was the theoretical part of the fieldwork. As well as facilitating and just briefing them [learners] on the general way in which fieldwork is conducted; including preparation of instruments, going out there, how they were supposed to conduct themselves and how they approach respondents. After having gathered information, how they go about analysing it i.e. no teacher sat there and analysed anything, what these kids came to do was to analyse the data and after analysing the data, conclusions were drawn. Presentations were made by learners to the fellow learners. In fact, it was totally learner-cantered. And in the same vein it was peer teaching that was happening as well, not just amongst themselves in their groups but through class presentations to other learners who did different topics. They could inform their peers about what they have learned based on the type of information they got from the field and also about how their feelings were, they could communicate all that to other learners. …the most important thing is, each group was basically given an opportunity to basically conduct fieldwork on a certain topic. But however, at the end, each group was given an opportunity to make a presentation on that specific topic. So, they were made to sit and make analysis of that topic and they prepared on that which worked out very well, it was well done. Then peer teaching was done as well from different topics by the different learners. So, it was most definitely a very much learner-centred way.	FGT1 FGT2 FGT1 FGT2

	…if we go back once again to the syllabus and what is expected of them in the different school examination papers that they are facing. They now know the starting points of fieldwork investigations; they now know and understand the concepts because they were in the field and they saw what they are learning in class. For me their learning needs were addressed because their learning was more open-ended and it was a visual thing i.e. hands-on thing it's not just a theoretical learning process that mostly takes place in a class. So, I think it was really addressing their learning needs. (FGT1)	FGT1
	When people tell you about problems happening in the informal settlements you will not really believe it or take it seriously. But seeing it for yourself like in fieldwork, it makes you understand it better and if you relate to it, it even makes you understand it even better.	FGDL9
	The work was much easier in a group because some of those people in those settlements could not understand English but in our group, there were people from different tribes and we could translate to each other what those people were saying. So, the work was easier.	FGDL1
	Working in groups made people more confident because when you are working with others, they help you where you do not actually understand how to explain things to other people like when you are doing interviews. The other people in your group can come in and help you.	FGDL7
Relevance: The goals (content and competencies) and the means of achieving them to meet the needs of the nation, the community and the learner's life context.	if we go back once again to the syllabus and what is expected of them in the different school examination papers that they are facing. They now know the starting points of fieldwork investigations; they now know and understand the concepts because they were in the field and they saw what they are learning in class. For me their learning needs were addressed because their learning was more open-ended and it was a visual thing i.e. hands-on thing it's not just a theoretical learning process that mostly takes place in a class. So, I think it was really addressing their learning needs.	FGT1
	The topics were relevant as well. Plus, the initial relevant topics for geography as a subject as far as fieldwork activities are concerned.	FGT2
	We investigated pollution and the types of problems caused by pollution in informal settlements. Pollution there is basically caused by people who live in informal settlements and they are different types of pollution and the people we interviewed mostly spoke about ground pollution, air pollution and noise pollution. Ground pollution is caused by littering and the disposal of dirt and air pollution was from burning of different waste. Noise pollution in those places happen because some	FGDL1

	houses that side are surrounded by bars, many bars and people are also crowded there and that provide more noise in such areas. For me as a learner, it helped me build my teamwork skills. I think those are the skills I can use even after high school not only here in high school. We focused on municipal services whereby we looked at the type of energy people use in informal settlements and if they have water or not, most houses did not really have water nearby and people have to walk a few Kilometres to get water. When we looked at the sources of energy they use, most of them use wood which contributed to air pollution and also some of the people use gas to cook their food. They do not have electricity for lighting their houses and they only use candles but then they also told us that sometimes accidents do happen with candles in some houses and that causes fires. Fieldwork is part of our Paper 3 exams, so seeing that and experiencing it for myself, it will make me not forget what I have learned	FGDL11 FGDL9 FGDL8
Reflexivity: The contribution to learner's personal orientation in a rapidly changing world of increasing uncertainty.	From my side, when I grow up and I get children one day, I will teach them values about life and what other people are really going through. I will teach them to respect and to help other people in the community that are very needy, because what you have in life is more than enough compared to other needy people. I also learned to appreciate what I have in life because it is more than enough. What I like about this fieldwork was that it was an eye opener, meaning that if one wants to be successful, one need education. This kind of fieldwork can be used to motivate learners because some learners need to see those kinds of settlements and experience how life is after school without education. learners took learning personal by wanting to stand up themselves and help with development challenges or helping the people or come up with ideas of what can be done with the information they were getting. They even asked me if they could forward the information to the municipality of the city of Windhoek. The learners really lived into what they were doing by interviewing and having contact with the people on the ground. So, they could see the shortages in all the ways all the types of services that we were looking for in the questionnaires. And they could even with the pollution, they could also pick up like what the people are lacking, what the people are using, what methods people are using to dispose waste, things like that. Really the learners acquired	FGDL2 FGDL9 FGT1

	knowledge and understanding and they showed how they wanted to help improve the living standards of the people in informal settlements. Learners working together in groups by consulting one another during group discussions and during the fieldwork investigations. Learners worked in groups when they were analysing data to prepare for the class presentation with minimal help from their teachers.	 FN
Sustainability: The take up of responsibility for global environmental changes and the uncertainty of future generations' wellbeing.	…teaching the learners through fieldwork allows them to get in touch with the problems and situations in the field and that makes them to start looking at what the possible solutions towards the problems can be. Learners can start thinking of solutions themselves or they start hearing about how the communities want the problems to be solved or they can seek for solutions from the government also. Fieldwork makes learners understand sustainable development problems and also improve learners to have skills and knowledge to solve sustainable development problems. Kids could pick up such things in the settlements. I think teaching fieldwork skills that is data collection and then field investigation is beneficial to the learners. As these kids go out there because sustainable development is all about conserving, protecting, restoring of the natural resources that are there so that people's lives would continue. Now, as these learners continue go out there collecting information in the field, they will be getting ideas from those people that are out there [in the field]. Through that learners will be able to learn about the experiences of the people in the field and they would also get ides or information from the respondents which learners themselves might not have come across. Through these investigations the kids will better understand how to better use the limited resources that are there because some of the information that one would come across might be that they are basically not going to be from the textbook. So, through investigations these kids will pick up some of this information and it will contribute to them understanding much better that "development can still continue but however it should be done in a more sustainable manner". The government should build more schools for kids to become educated and when the kids are educated then there can be a better change.	FGT1 FGT2 FGDL1

APPENDIX 6: AUTHORISATION LETTER TO CONDUCT RESEARCH IN NAMIBIA

REPUBLIC OF NAMIBIA

MINISTRY OF EDUCATION, ARTS AND CULTURE

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File no: 11/1/1

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Dear Mr. Simasiku

SUBJECT: PERMISSION TO CONDUCT RESEARCH IN NAMIBIA

Kindly be informed that permission to conduct research for your PhD Degree in *"The Contributions of Education for Sustainable Development (ESD) to Quality Education: The Role of Geographical Fieldwork"* is herewith granted. You are further requested to present the letter of approval to the Regional Director to ensure that research ethics are adhered to and disruption of curriculum delivery is avoided.

Furthermore, we humbly request you to share your research findings with the ministry. You may contact Mr C. Muchila/ Mr. G. Munene at the Directorate: Programmes and Quality Assurance (PQA) for provision of summary of your research findings.

I wish you the best in conducting your research and I look forward to hearing from you soon.

Sincerely yours,

Ministry of Education, Arts and Culture
Office of the Permanent Secretary
2017 -10- 24
Private Bag 13186 Windhoek, Namibia

SANET L. STEENKAMP
PERMANENT SECRETARY

24.10.17
Date

All official correspondences must be addressed to the Permanent Secretary

APPENDIX 7: PERMISSION LETTER KHOMAS REGION

REPUBLIC OF NAMIBIA

KHOMAS REGIONAL COUNCIL

DIRECTORATE OF EDUCATION, ARTS AND CULTURE

Tel: [09 264 61] 293 9411
Fax: [09 264 61] 231 367/248 251

Private Bag 13236
WINDHOEK

File No: 12/3/9/1

Frederick Simasiku
Private Bag X 1
Matieland, 7602
South Africa

REQUEST FOR PERMISSION TO UNDERTAKE RESEARCH STUDY IN SCHOOLS, KHOMAS REGION

Your letter dated 22 January 2018 on the above topic bear reference.

Permission is hereby granted to you to do research for your PhD (Environmental Education) Programme with the topic of research title: "The Contribution of Education for Sustainable Development (ESD) to Quality Education: The role of Geographical Fieldwork" at the following schools-[redacted] School where you will chose one (1) Grade 11/12 Geography teacher and six (6) Geography learner from each school..

The following must be adhered to:

- Permission must be granted by the School Principal;
- Teaching and learning in the respective schools should not be disrupted;
- Teachers and learners who will take part in the research should do so voluntarily;
- A copy of your thesis with the findings/recommendations must be provided to the Directorate of Education, Arts and Culture, Khomas Regional Council.

I trust this confirmation will suffice.

Yours sincerely

25/01/2018

Gerard N. Vries
Director of Education, Arts and Culture

MINISTRY OF EDUCATION, ARTS AND CULTURE
PRIVATE BAG 13236 WINDHOEK
25 -01- 2018
DIRECTOR
KHOMAS REGION

APPENDIX 8: ETHICAL CLEARANCE

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NOTICE OF APPROVAL

REC Humanities New Application Form

5 July 2018

Project number: 1915

Project Title: The Contributions of Education for Sustainable Development (ESD) to Quality Education: The Role of Geographical Fieldwork

Dear Mr Frederick Simasiku

Your REC Humanities New Application Form submitted on 19 June 2018 was reviewed and approved by the REC: Humanities.

Please note the following for your approved submission:

Ethics approval period:

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
5 July 2018	4 July 2021

GENERAL COMMENTS:

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (1915) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Data collection tool	Interview Guide for Teachers	08/11/2017	PDF
Data collection tool	Questions for learner focus groups	08/11/2017	PDF
Data collection tool	Questions for teacher focus groups	08/11/2017	PDF
Proof of permission	Authorisation letter Ministry of Education Namibia	08/11/2017	PDF
Proof of permission	Authorisation to Schools	23/02/2018	
Parental consent form	Consent form Parent-Legal guardian	06/06/2018	
Assent form	Child Assent Form	06/06/2018	
Informed Consent Form	Child Assent Form	06/06/2018	
Informed Consent Form	Consent form Parent-Legal guardian	06/06/2018	
Proof of permission	Letters From Schools	06/06/2018	
Default	Letter to the Ethics Committee	06/06/2018	
Research Protocol/Proposal	Frederick Simasiku PhD Proposal June 2018	19/06/2018	PDF

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.
The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.

APPENDIX 9: CONSENT FORM TEACHERS

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jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

Dear Geography Teacher,

My name is **Frederick Simasiku** and I am a **PhD (Environmental Education) student** I would like to invite you to participate in a research project entitled ***"The Contributions of Education for Sustainable Development (ESD) to Quality Education: The role of Geographical Fieldwork"***

Please take some time to read the information presented here, which will explain the details of this project and contact me if you require further explanation or clarification of any aspect of the study. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

1. **PURPOSE OF THE STUDY**
   The purpose of the study is to explore how the integration and implementation of Education for Sustainable Development (ESD) through the application of Geographical fieldwork contributes to the provision of Quality Education at the classroom level. The study seeks to find out how the teaching of geography in secondary schools through the application of fieldwork as a teaching method can contribute to quality learning outcomes amongst school learners.

2. **PROCEDURE**
   Once you agree to participate in this study, you will be involved in the following activities:

i. You will be required to participate in a semi-structured interview lasting not more than 30 minutes. The purpose of the interview will be to establish your understanding of Education for Sustainable Development (ESD) and Quality Education in relation to the teaching of Geography through fieldwork. The interview session will be recorded audibly by means of a digital voice tracer in order to keep record of the responses to be analysed later.

ii. Based on the interview responses, you will be required to take part in a short lesson planning session (Optional). The purpose of the lesson planning session will be twofold: firstly, to share the results of the semi-structured interviews in terms of the integration and implementation of ESD through the application of Geographical fieldwork. Secondly, the lesson planning session will also enable you and the researcher to plan a total number of four (4) geography lessons and one (1) fieldwork activity for implementation. The lessons will be planned in such a way that two (2) lesson should be implemented prior to the fieldwork activity and the other two (2) lessons should be implemented after the fieldwork activity. The lessons planned will be based on the grade 11/12 geography syllabus on the topic of "Settlement studies".

iii. You will implement the first two (2) planned lessons in your geography class based on time allocated for geography on the school timetable. Thereafter, you will be requested to implement the fieldwork activity at the Havana settlement in Windhoek. The fieldwork learning activity is expected to last no longer than two (2) hours. Preferably the fieldwork should take place in the afternoon between (2pm-4pm) on a week day. The other two (2) lessons would then be implemented after the fieldwork learning activity. I will observe

the lessons in order to record the teaching and learning process. Kindly be informed that the lesson observations will only be done for the purpose of collecting data on the teaching and learning activities based on the planned lessons in order to answer the research question. I will write field notes on what I will be observing. I will also accompany the class during the fieldwork activity and observe the activities. I will also write field notes during the fieldwork activity.

iv. Thereafter, you will be required to participate in a focus group discussion with other teachers, the session will be facilitated by myself (researcher). The focus group session will not last longer than an hour. The purpose of the focus group session will be to enable you to reflect on your experience of the application of Geographical fieldwork in your class.

3. POTENTIAL FOR NEGATIVE EXPERIENCES

You might feel uncomfortable with my presence in your classroom but I would like to communicate to you that it will be a good learning experience for me as researcher. I am interested in finding out how the integration and implementation of Education for Sustainable Development (ESD) through the application of Geographical Fieldwork contributes to quality education (qualitative learning outcomes amongst learners). You might experience some discomfort during the interview session with regards to responding to some of the questions pertaining to the conceptualisation and interpretation of concepts such as Education for Sustainable Development (ESD); Quality Education as well as Geographical fieldwork. In most cases, the above concepts are not explicitly stipulated in the Namibia formal Geography curriculum documents, and that may cause some discomfort at some point during the interview session. However, it should be mentioned that, although Education for Sustainable Development (ESD) is not explicitly stipulated in the curriculum documents. It is important to note that ESD is being implemented as a cross-curricular theme across different school subjects including Geography. As a participant, I would like to inform you that the intention of the interviews will only be for the purpose of collecting information about your teaching practice. The information that you will provide will purely be used for research purposes and will be confidential. I also hope that you will find both Quality education and Geographical fieldwork fascinating and enriching during the research process.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

It is hoped that findings from this study will make a significant contribution to the implementation of Education for Sustainable Development in the geography school curriculum. It is also anticipated that the findings of the study would inform future teaching and learning of ESD through the application of geographical fieldwork. The study will also offer an opportunity to participating teachers to widen their understanding of teaching geography through the application of geographical fieldwork. Moreover, it is also expected that, the findings of this study will have informative implications for curriculum development, teacher education, and classroom practice with regard to improving the quality of education in schools. I hope this research will contribute to the improvement of knowledge about geographical fieldwork and ESD and provide guidance on the development of educational approaches that has significant impact on the quality of education in Namibia.

5. PAYMENT FOR PARTICIPATION

There will be no financial payment involved for participating in this research study.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality of the data obtained from each participant will be maintained by means of use of pseudonyms when I refer to you in the dissertation or in journal articles. The name of your school will not be disclosed.

The data (including audio recording) will be kept in my private computer and in memory sticks, these will be password protected. These will be located in a private room which is not shared with others. I am the only one with access to the computer and will therefore ensure that the data will be safe. The interviews will be transcribed immediately. The analysis of transcriptions and data obtained in the fieldwork will take place simultaneously as the fieldwork is being conducted. The development of a coding system will enable the data to be searched for regularities and patterns as well as for topics covered by the collected data. In the dissertation some direct quotations from the interview might be written but I will ask for permission from you to use the quotations.

The information could be released to my promoter should the need arise but he is aware of the University regulations concerning the protection of participant confidentiality. The information could be released only if I experience problems in analysing the data. There is nobody else to whom the information could be released other than my promoter.

You have a right to review the digital audio data but we will have to negotiate on what you would like to be edited. I will be the only one with access to the digital audio data. They will be safely stored for a minimum period of five (5) years. The outputs of the research project will be a dissertation and journal articles.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so. Should I feel that your cooperation is not adequate and compromises the data collection process, I will terminate your participation.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact myself,

Frederick Simasiku, PhD Student

Department of Curriculum Studies, Faculty of Education

Email: 18666167@sun.ac.za or ssimasiku@yahoo.com

Tel: +27 78 239 6409 or +264 81 424 6097

Or my promoter **Professor Lesley Le Grange**

Department of Curriculum Studies, Faculty of Education

Email: llg@sun.ac.za

Tel: +27 21 808 2280

Office 4013, Fourth Floor

9. RIGHTS OF RESEARCH SUBJECTS

RIGHTS OF RESEARCH PARTICIPANTS: You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

You have right to receive a copy of the Information and Consent form.

If you are willing to participate in this study please sign the attached Declaration of Consent and hand it to the researcher.

DECLARATION BY PARTICIPANT

By signing below, I …….. agree to take part in a research study entitled **"The Contributions of Education for Sustainable Development (ESD) to Quality Education: The role of Geographical fieldwork"** and conducted by **Frederick Simasiku**

Do you agree to take part in the semi-structured interview?

YES	NO

Do you agree to take part in the fieldwork lesson planning and implementation with the researcher?

YES	NO

I declare that:

- I have read the attached information leaflet and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.
- All issues related to privacy and the confidentiality and use of the information I provide have been explained to my satisfaction.

Signed on ……..

……

Signature of participant

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to _____ [*name of the participant] [H*e/she] was encouraged and given ample time to ask me any questions. This

conversation was conducted in [*Afrikaans/*English/*Xhosa/*Other*] and [*no translator was used/this conversation was translated into* _____ by _____].

_____ _____

Signature of Investigator **Date**

APPENDIX 10: ASSENT FORM FOR MINORS

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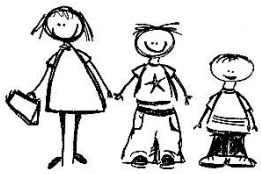
ASSENT FORM FOR MINORS



TITLE OF THE RESEARCH PROJECT: The Contributions of Education for Sustainable (ESD) to Quality Education: The Role of Geographical Fieldwork.

RESEARCHERS' NAME: Frederick Simasiku

RESEARCHER'S CONTACT NUMBER: +264 81 424 6097

1. **What is RESEARCH?**
   *Research is something we do find **NEW KNOWLEDGE** about the way things (and people) work. We use research projects or studies to help us find out more about children and teenagers and the things that affect their lives, their schools, their families and their health. We do this to try and make the world a better place!*

2. **What is this research project all about?**
   This research study tries to find out how you experience learning the subject of geography at school through doing fieldwork learning activities. The study tries to understand your views, opinions and experiences of fieldwork learning activities in order to establish how that contributes to quality learning outcomes.

3. **Why have I been invited to take part in this research project?**
   You are invited to take part in this study because you are a grade 11/12 geography learner, the grade that is a focus of this study.

4. **Who is doing the research?**
   My name is Frederick Simasiku a PhD (Environmental Education) student from the Curriculum Studies Department, Faculty of Education, Stellenbosch University. The findings of this research study will contribute to the writing of a PhD thesis and the writing of other papers for publication in scholarly journals.

5. **What will happen to me in this study?**
   Once you agree to participate in this study, you will be involved in the following activities:

a. *You will be required to sign this assent form and return it to me after 4 days. You will also be required to take another form i.e. Consent for to your parents/legal guardians and ask them to grant you permission to take part in this study. You will only be allowed to take part in this study once both forms will be signed and returned to me.*

b. *You will then be required to attend four (4) geography lessons focusing on the topics of fieldwork and settlement studies in your class as well as take part in a geographical fieldwork learning exercise in the Havana settlement of Windhoek. You will attend the first two (2) of the four (4) lessons in your geography class and then take part in the fieldwork exercise, thereafter, you will attend the other two (2) geography lessons afterwards.*
c. *I will attend and observe all four (4) lessons as well as the fieldwork learning activity in the Havana settlement of Windhoek. I will observe the lessons and the fieldwork activity in order to obtain information on the learning activities that you will be involved with in order to answer the research question for the study.*
d. *The four (4) lessons will all take place during your normal geography lesson timeslot on the school timetable. The fieldwork activities will require you to interview residents in the Windhoek Havana settlement. You will be provided with the questions and all instructions will be given to you by your geography teacher. The fieldwork activities will take place after school during the afternoon. Transport will be provided by the school and you will be accompanied by the researcher and the geography teacher during the fieldwork activity. The fieldwork activity will not last longer than two (hours) and you will be required to be in your school uniform during the fieldwork activity.*
e. *Thereafter, you will be required to participate in a focus group discussion (interview) session with other five (5) learners, the session will be facilitated by myself. The purpose of the focus group session will be to allow you to share your experience of learning geography through fieldwork.*

6. Can anything bad happen to me?

The purpose of the study is to find out how geography fieldwork lessons contributes to your learning of geography at school. You might experience some discomfort during the fieldwork learning activities as well as during the focus group interview session with regards to responding to some of the questions. As a participant, I would like to inform you that the intention of the focus group interviews as well as that of the fieldwork learning activities will only be for the purpose of collecting information about your learning experience. The information that you will provide will only be used for research purposes and will be confidential. I also hope that you will find both learning through geographical fieldwork and the focus group interview session educational and enjoyable during the research process.

7. Can anything good happen to me?

It is hoped that findings from this study will make an important contribution to learners' learning outcomes in the geography school curriculum. It is also expected that the findings of the study would inform future teaching and learning of Education for Sustainable Development (ESD) through geography fieldwork. The study will also offer you with an opportunity to widen your understanding of local issues through participating in geography fieldwork learning activities. Moreover, it is also expected that, the findings of this study will have recommendations for curriculum development, teacher education, and classroom practice with regard to improving the quality of education in schools. I hope this research will contribute to the improvement of knowledge about geographical fieldwork at the classroom level in Namibian secondary school Geography curriculum.

8. Will anyone know I am in the study?

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality of the data obtained from each participant will be maintained by means of use of pseudonyms (not real names) when I refer to you in the thesis or in journal articles. The name of your school will not be disclosed.

The information will be kept in my private computer and in memory sticks, these will be password protected. These will be located in a private room which is not shared with others. I am the only one with access to the computer and will therefore ensure that the data will be safe. The interviews will be transcribed/ (written/typed in words) immediately. The analysis of transcriptions and data obtained in the fieldwork will take place simultaneously as the fieldwork

is being conducted. The development of a coding system will enable the data to be searched for regularities and patterns as well as for topics covered by the collected data. In the thesis some direct quotations from the interview might be written but I will ask for permission from you to use the quotations.

The information could be released to my promoter should the need arise but he is aware of the University regulations concerning the protection of participant confidentiality. The information could be released only if I experience problems in analysing the data. There is nobody else to whom the information could be released other than my promoter.

You have a right to review the digital audio data but we will have to negotiate on what you would like to be edited. I will be the only one with access to the digital audio data. The audio recorded data will also be kept in my private computer and memory sticks and they will be password protected. They will be safely stored for a minimum period of five (5) years. The outputs of the research project will be a thesis and journal articles.

9. Who can I talk to about the study?

If you have any questions or concerns about the research, please feel free to contact me the Researcher,
Frederick Simasiku, PhD Student
Department of Curriculum Studies, Faculty of Education
Email: 18666167@sun.ac.za or ssimasiku@yahoo.com
Tel: +27 78 239 6409 or +264 81 424 6097

Or my promoter Professor Lesley Le Grange
Department of Curriculum Studies, Faculty of Education
Email: llg@sun.ac.za
Tel: +27 21 808 2280
Office 4013, Fourth Floor

10. What if I do not want to do this?

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without penalties of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may stop you from this research if situations arise which may require doing so. Should I feel that your cooperation is not satisfactory and compromises the data collection process, I will stop your participation.

Do you understand this research study and are you willing to take part in it?

YES	NO

Has the researcher answered all your questions?

YES	NO

Do you understand that you can STOP being in the study at any time?

YES	NO

_____ _____

Signature of Child Date

APPENDIX 11: CONSENT FORM PARENTS/LEGAL GUARDIANS

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jou kennisvennoot • your knowledge partner

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PARENT/LEGAL GUARDIAN CONSENT FOR CHILD TO PARTICIPATE IN RESEARCH

I would like to invite your child to take part in a study conducted by **Frederick Simasiku**, from the **Curriculum Studies Department, Faculty of Education at Stellenbosch University**. Your child will be invited as a possible participant because he/she belongs to a class i.e. grade 11/12 geography class that was selected to take part in a research study i.e. the focus of the research.

1. PURPOSE OF THE STUDY

The study explores how the implementation of Education for Sustainable Development (ESD) through the application of geographical fieldwork contributes to the quality of education of learners. The study intends to find out how the teaching and learning of geography in schools through fieldwork contributes to quality learning leaning outcomes among school children.

2. WHAT WILL BE ASKED OF MY CHILD?

If you consent to your child taking part in this study, the researcher will then approach the child for their assent to take part in the study. If the child agrees to take part in the study, he/she will be asked to:

i. Sign and return an assent form to me indicating that he/she is willing to participate in the study.
ii. Participate in four (4) geography lessons in his/her classroom during the normal geography class periods. Take part in a geography fieldwork learning activity that will take place in the Havana settlement of Windhoek under the supervision of the researcher and the geography teacher. The researcher will observe all four (4) geography lessons that will be based on the geography syllabus topic on 'Settlement studies. The researcher's observations will be written in his research journal in order to capture the learning activities that will take place during the four (4) lessons as well as during the fieldwork learning activity in order to answer the research question for the study. The fieldwork learning activity will happen after school in the afternoon. Transport will be provided by the school i.e. learners will be transported to do their fieldwork activities and then they will be transported back to school. The fieldwork learning activity will not last longer than two (2) hours and your child will be required to be in his/her school uniform during the fieldwork learning activity. The fieldwork learning activity will be done on a school day after lunch.
iii. Take part in a focus group interview session with other school children. The focus group interviews will be facilitated by myself (researcher) and they will take place at the school premises and will last for not longer than forty-five (45) minutes. The purpose of the focus group interview will be to offer your child an opportunity to express her/his experience and opinions about geography fieldwork learning activities that the class will engage with. The focus group interview session will be recorded audibly on a digital voice recorder.

3. POSSIBLE RISKS AND DISCOMFORTS

Permission has been granted by the Ministry of Education Head Office in Windhoek to conduct this study at the school. Permission has also been obtained from the school authorities to undertake this research study. The fieldwork learning activities that will take place outside the school premises will be conducted under the supervision of the geography teacher and the researcher. The health, safety and welfare of your child will be safeguarded by making sure that the fieldwork sites will be risked assessed prior to the fieldwork visit. The school procedures and protocol regulating all fieldwork trips/excursions will be observed and adhered to. The focus group interviews will only be based on questions about the fieldwork learning activities and no inappropriate questions will be asked. Your child will participate in the focus group interviews with other five (5) children. There might be some discomfort that might be experienced by your child during the focus group interview session regarding some questions. Kindly be informed that your child will not be required to answer questions that he/she will not feel comfortable with.

4. POSSIBLE BENEFITS TO THE CHILD OR TO THE SOCIETY

By participating in this research study, your child will provide valuable information that will inform the future teaching and learning of geography through the application of geographical fieldwork in schools. Such information could also provide insights of how geographical fieldwork as a teaching method in schools could contribute to educating school children about sustainable development in Namibia. This research is expected to contribute to knowledge of how the teaching of geography through the application of geographical fieldwork contributes to quality learning outcomes amongst school children.

5. PAYMENT FOR PARTICIPATION

There will be no financial payment involved for participating in this research study.

6. PROTECTION OF YOU AND YOUR CHILD'S INFORMATION, CONFIDENTIALITY AND IDENTITY

Any information you or your child will share with me during this study and that could possibly identify you or your child will be protected and remain confidential and will be disclosed only with your permission or as required by law. Confidentiality of the data obtained from each participant will be maintained by means of use of pseudonyms when I refer to your child in the dissertation or in journal articles. The name of your child's school will not be disclosed.

The data (including audio recording) will be kept in my private computer and in memory sticks, these will be password protected. These will be located in a private room which is not shared with others. I am the only one with access to the computer and will therefore ensure that the data will be safe. The interviews will be transcribed immediately. The analysis of transcriptions and data obtained in the fieldwork will take place simultaneously as the fieldwork is being conducted. The development of a coding system will enable the data to be searched for regularities and patterns as well as for topics covered by the collected data. In the dissertation some direct quotations from the interview might be written but I will ask for permission from you to use the quotations.

The information could be released to my promoter should the need arise but he is aware of the University regulations concerning the protection of participant confidentiality. The information could be released only if I experience problems in analysing the data. There is nobody else to whom the information could be released other than my promoter.

Your child will have a right to review the digital audio data but we will have to negotiate on what he/she would like to be edited. I will be the only one with access to the digital audio data. They will be safely stored for a minimum period of five (5) years. The outputs of the research project will be a dissertation and journal articles.

7. PARTICIPATION AND WITHDRAWAL

You and your child can choose whether to be part of this study or not. If you consent to your child taking part in the study, please note that your child may choose to withdraw or decline participation at any time without any consequence. Your child may also refuse to answer any questions they don't want to answer and still remain in the study. The researcher may withdraw your child from this study if circumstances arise which warrant doing so.

8. RESEARCHERS' CONTACT INFORMATION

If you have any questions or concerns about this study, please feel free to contact **Frederick Simasiku** at +264814246097/+27782396409, and/or the supervisor **Prof Lesley Le Grange** at +27 21 808 2280.

9. RIGHTS OF RESEARCH PARTICIPANTS

Your child may withdraw their consent at any time and discontinue participation without penalty. Neither you nor your child are waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your or your child's rights as a research participant, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

DECLARATION OF CONSENT BY THE PARENT/ LEGAL GUARDIAN OF THE CHILD-PARTICIPANT

As the parent/legal guardian of the child I confirm that:

- I have read the above information and it is written in a language that I am comfortable with.
- I have had a chance to ask questions and all my questions have been answered.
- All issues related to privacy, and the confidentiality and use of the information have been explained.

By signing below, I _____ agree that the researcher may approach my child to take part in this research study, as conducted by **Frederick Simasiku**.

_____ _____

Signature of Parent/Legal Guardian **Date**

Please indicate below (with a cross x) if you grant the researcher permission to take photographs of your child or not during the research process.

Yes (permission granted)	
No (permission not granted)	

As the **principal investigator,** I hereby declare that the information contained in this document has been thoroughly explained to the parent/legal guardian. I also declare that the parent/legal guardian was encouraged and given ample time to ask any questions.

_____ _____

Signature of Principal Investigator **Date**